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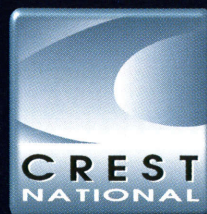


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The International Journal of Film & Digital Production Techniques

Features

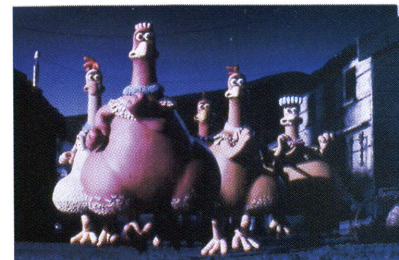


On Our Cover: Scientist Sebastian Caine (Kevin Bacon) is rendered invisible in the sci-fi thriller *Hollow Man*, directed by Paul Verhoeven and photographed by Jost Vacano, ASC, BVK (photo by Stephen Vaughan, SMPSP; courtesy of Sony Pictures).

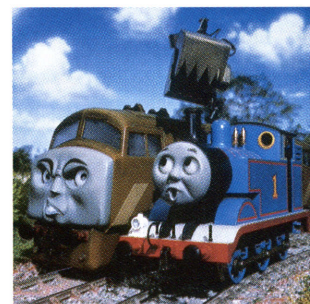
Contributing Writers:

Stephanie Argy
John Gainsborough
Jay Holben
John C. Hora, ASC
Naomi Pfefferman
Steven B. Poster, ASC
Les Paul Robley
David Wiener
David E. Williams

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August 2000 Vol. 81, No. 8
The International Journal of Film & Digital Production Techniques • Since 1920

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American Cinematographer (ISSN 0002-7928) established 1920 in 81st year of publication is published monthly in Hollywood by ASC Holding Corp., 1782 N. Orange Dr., Hollywood, CA 90028, U.S.A., (800) 448-0145, (323) 969-4333, Fax (323) 876-4973, direct line for subscription inquiries (323) 969-4344. Subscriptions: U.S. \$40; Canada/Mexico \$60; all other foreign countries \$75 a year (remit international Money Order or other exchange payable in U.S. \$). Advertising: Rate card upon request from Hollywood office. For East Coast & Midwest sales (203) 761-9804, FAX (203) 761-0090, 387 Danbury Rd., Wilton, CT 06897. For European sales +44.1753.650101, FAX +44.1753.650111, Office 128, Pinewood Studios, Iver, Buckingham, England, SLO ONH.

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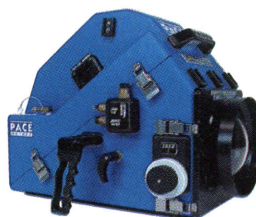
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The ASC is not a labor union or a guild, but an educational, cultural and professional organization. Membership is by invitation to those who are actively engaged as directors of photography and have demonstrated outstanding ability. ASC membership has become one of the highest honors that can be bestowed upon a professional cinematographer—a mark of prestige and excellence.

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COOKE S-4 LENSES

These latest offerings from Cooke have several key features that set them apart from others commonly used in the industry today. They are far more resistant to internal flares and veiling glare, and focus breathing is virtually non-existent.

All Cooke S-4 lenses are a true T2, and the focus and iris scales are large, easy-to-read, and on both sides of each lens for optimum convenience. They can be fitted with PL or BNCR mounts, and fit on all cameras that accept Arriflex lenses. Ask to see the S-4 test footage for a real eye-opener.

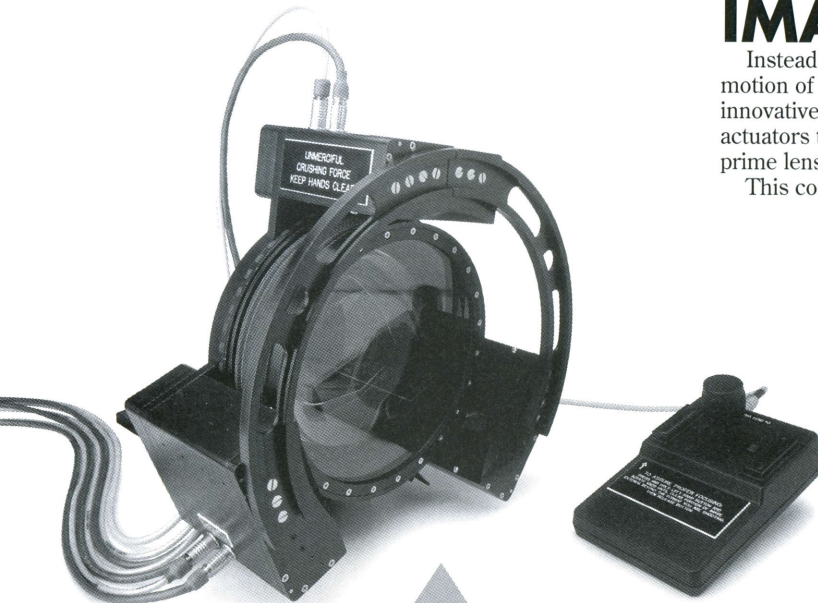


IMAGE SHAKER

Instead of having to mechanically "shake" a camera to replicate the motion of anything from an earthquake to a rough road, Clairmont's innovative Image Shaker relies upon two microprocessor controlled actuators to "shake" a proprietary optical device mounted in front of the prime lens using standard 15mm Arriflex rods.

This compact device weighs only 9 lbs., and can actually be used in hand-held situations.

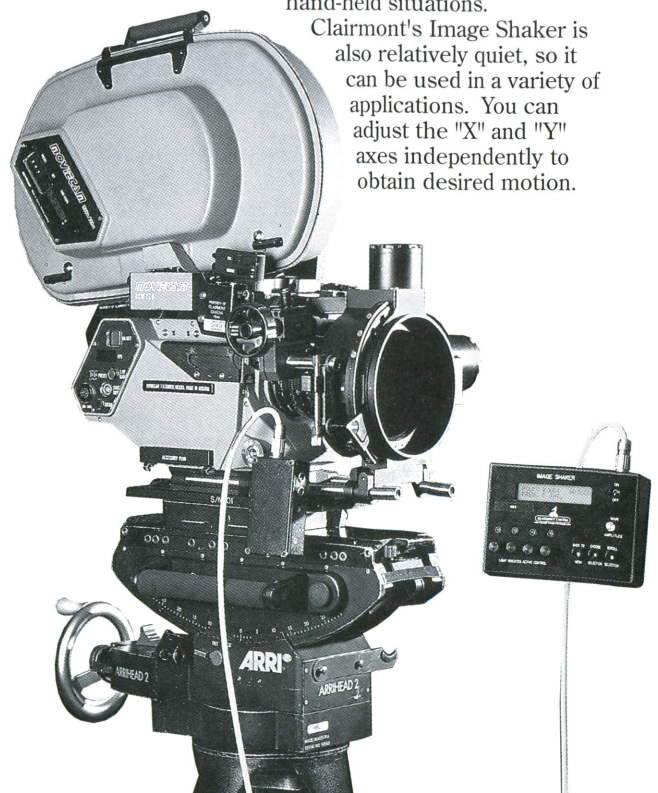
Clairmont's Image Shaker is also relatively quiet, so it can be used in a variety of applications. You can adjust the "X" and "Y" axes independently to obtain desired motion.



SQUISHY LENS

This Clairmont original gives DPs the opportunity to obtain a myriad of special effects right in-camera. Not only is there the benefit of seeing them in real time, but there are huge potential savings in costly post-production digital special effects.

Briefly, the Squishy Lens consists of a crystal-clear, flexible aspheric optic whose shape is infinitely variable. A simple "joy stick" is used to control the servo motors which manipulate the Squishy (which is mounted in front of any 14mm-65mm taking lens). Bottom line, you've got to see the demo tape to appreciate all it can do.



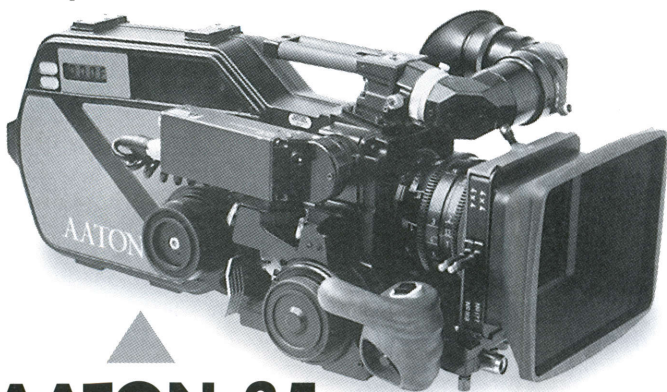
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MOVIECAM SL

The "SL" designation stands for "super light" and it's not just a marketing gimmick. This exceptionally compact camera is less than a foot and a half long (with appropriate magazines) and weighs under 15 lbs., complete with lens and magazine.

A number of special features are incorporated into this sub-compact unit, including a thermostatically controlled heater for the camera and magazine. Clairmont's specially modified SLs have a camera speed that is adjustable in .001 increments from 2 to 40 frames per second.



AATON 35

This is the 35mm camera that is often mistaken for a 16mm, due to its compact profile. Needless to say, the size and weight of the Aaton make it ideal for use in many situations, such as hand-held action shots or the confined spaces of cars, airplanes, etc.

The latest versions of the 35-III, which incorporate a number of design improvements based on our input, are in stock at Clairmont. These cameras also have a few extra modifications, which is what often sets a Clairmont camera apart from others. Try it for yourself.

ARRIFLEX 535B

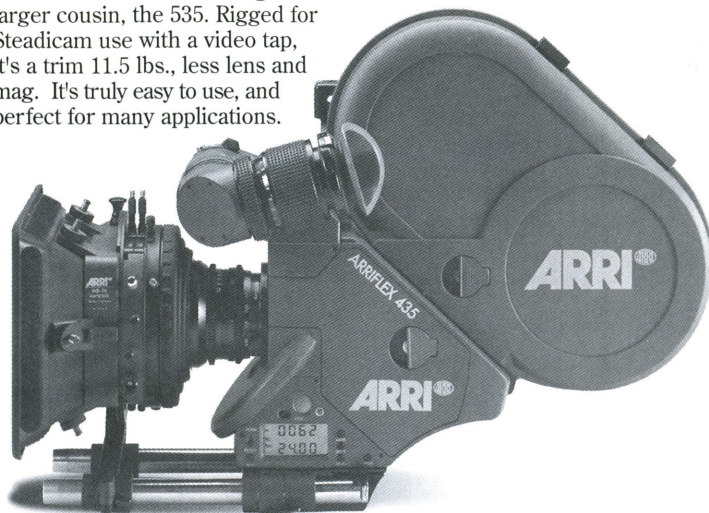
This latest addition to the Arriflex line is truly a marvel of contemporary technology. The 535B is a more compact, lightweight version of the 535, yet retains its modular design and quiet operation. Available features include a standard SMPTE time code, CCD color video assist, and a 2-axes pivot Swingover Viewfinder. Camera speeds are programmable in .001 increments from 3 to 60 fps, and numerous microprocessor controlled electronic features. Best of all, its compact design and ergonomic enhancements add up to exceptional ease of handling.



ARRIFLEX 435

Hailed as the next generation MOS camera, the Arri 435 can deliver rock-steady images at any speed between 1 and 150 frames per second, at .001 increments, with time code, an integral feature. An integrated color video tap is also part of the 435's design.

Compact, lightweight design is the hallmark of the 435, as it tips the scales at about half the weight of its larger cousin, the 535. Rugged for Steadicam use with a video tap, it's a trim 11.5 lbs., less lens and mag. It's truly easy to use, and perfect for many applications.



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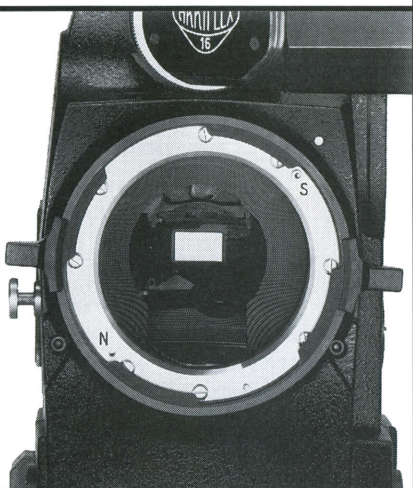
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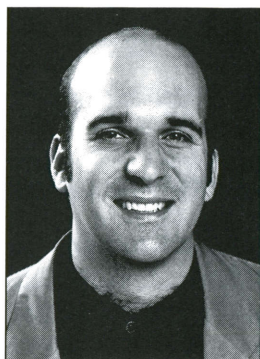


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Editor's Note



Throughout film history, cinematographers have used airborne camerawork to lend motion pictures scope, scale, and grandeur, but aerial photography can also be used to enhance a narrative in a much subtler manner. Whether the shot in question involves a spectacular plane stunt or a quietly majestic perspective, the professionals operating the camera must have not only a keen eye, but also a thorough knowledge of the technical, logistical and safety issues associated with aerial work.

In exploring this high-flying but rigorous discipline, we've sought out some of the top aerial equipment companies and cinematographers. Our coverage is twofold: "Bird's-Eye View" (page 92) profiles a number of companies that provide the film industry with state-of-the-art equipment and services, while "Top Guns" (page 108) presents insights from five veteran cameramen whose expertise has enhanced a wide range of features. Both of these pieces spotlight the special skills demanded by this often underappreciated craft.

This month's other articles are an eclectic mix. *AC* dispatched a four-man team to cover the cutting-edge technical work that went into *Hollow Man*, a sci-fi thriller about a scientist who is rendered invisible and soon wreaks havoc with his newfound power. Our articles and sidebars detail the photographic strategy employed by Jost Vacano, ASC, BVK ("Sight Unseen," page 38), the film's visual effects ("Now You See Him..." page 42) and motion-control work ("Transparent Camera Moves," page 46), as well as director Paul Verhoeven's approach to the film's sinister and often violent script ("Invisible Force," page 50).

On the lighter side, we've also covered several pictures that are suitable for audiences of all ages. *Chicken Run* showcases the painstaking stop-motion craftsmanship of the wizards at Aardman Animations ("Flying the Coop," page 56), whose traditional methods were enhanced with intricate yet unobtrusive digital work by Computer Film Company ("Recipe for Success," page 66); *Thomas and the Magic Railroad*, shot by Paul Ryan, ASC ("All Aboard!", page 74), brings a beloved children's book to vivid, colorful life; and *Solarmax*, a large-format film photographed by a team of four cinematographers ("Here Comes the Sun," page 82), presents some truly stunning views of Earth's most justifiably celebrated star.

Sincerely,

Stephen Pizzello, Executive Editor
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— Vilmos Zsigmond, ASC

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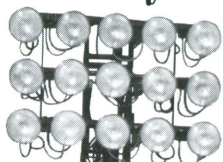
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Letters

Panavision's President Speaks Out

As president of Panavision, a company with a major and continuing investment in the technology of motion picture cameras, lenses and accessories, I have become aware of a growing hysteria surrounding the introduction by Sony of a 24 frames-per-second, CCD integrated camera-recorder. This hysteria has been accompanied by general misinformation, Internet chat-room garbage, outrageous claims by some, and unrealistic expectations by many.

Panavision is one of the designers of the electronic cinematography system based on this technology, and I would like the opportunity to present Panavision's point of view.

The following is the press release that was made available on July 3, 1997, during the ITS (International Teleproduction Society) Forum at the Beverly Hilton Hotel, on the occasion of Sony's announcement of the collaboration between Sony, Lucasfilm, and Panavision to develop a 24 fps digital camera system:

"Panavision is synonymous with the highest quality of film equipment and services supplied to cinematographers and filmmakers.

"Just as the major film manufacturers have been developing digital imaging systems to complement their film business and products, so too must Panavision be in the forefront of providing its equipment, service and expertise to those cinematographers who require the seamless integration of film and digital imaging systems. It is our goal to ensure that our clients are provided with systems that do not compromise their creative vision, regardless of the photographic medium of their choice.

"Therefore, we are very pleased that a company with Sony's expertise

and reputation in manufacturing digital imaging systems has asked Panavision to be their partner in the development of this new "Electronic Cinematography" system. Panavision is currently evaluating the design criteria necessary to create a family of Panavision "Primo" lenses and accessories — specifically for cameras and camcorders being developed by Sony for this new "Electronic Cinematography" system. It is our goal to provide the cinematographer with the full range of technical capabilities and high picture quality that has been the hallmark of the "Primo" lens system."

This statement, made three years ago, still reflects our position. Since this statement, and in recognition that film is not only not dead but yet to develop any symptoms of serious illness, Panavision has introduced two completely new film cameras, the Millennium and the Millennium XL; three new zoom lenses; seven new Primo primes; many other specialty lenses and numerous accessories. In our continuing desire to support our customers' needs, during this year we will also introduce a series of Primo Digital primes and zoom lenses and a version of the Panavision Frazier lens, all specifically designed to optimize image quality for the 2/3" digital CCD format. Film or digital, we would like to ensure that the choice is yours!

During the past months, various claims and numerous advertisements have appeared in the trade press, touting the qualities of this digital format long before even prototypes of this camera existed. Panavision has chosen not to produce advertisements making claims for this system until we have had an opportunity to present a complete system to our customers for their critique. Historically, this is how Panavi-

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sion has chosen to conduct its business with its clients. Panavision's philosophy for digital imaging is no different from the approach it has used for its film product, which is to develop its equipment and systems in conjunction with cinematographers, camera crews, and directors. Panavision's goal is to provide a digital system specifically for use by film crews. We firmly believe that without this collaboration, digital capture systems will remain what they have been: an ENG camera with an ENG zoom lens.

The last point I would like to address is usually the first question we are asked: "Is this as good as film?" This is a simple and obvious question. Unfortunately, the answer is no. Are acrylics as good as oils? Are pastels as good as watercolors? These questions were once asked, but today most art critics would dismiss them as irrelevant. These are simply different artistic mediums with their own unique properties. For many reasons, the end users — our customers — must take time to evaluate this medium for themselves for its suitability for their particular application.

While there is no rush, it is vital that cinematographers fully understand the additional, controllable elements of this new medium. For example, the Panavision Sony camera has, among other things, variable gamma and colorimetry that can be modified by the user. This places more options for creative control in the hands of the cinematographer. To relinquish this control to a video technician is the equivalent of allowing someone to change the film stock mid-scene.

In conclusion, I would like to quote from an address given by Bruce Jamieson, president of the Association of Cinema Laboratories, and printed in a 1972 issue of *American Cinematographer* magazine:

"To remain viable we must be: both artists and engineers; both businessmen and visionaries; both pragmatists and dreamers. Progress will create problems, of course — it always has. But rather than avoid it, we must embrace it — we must apply our knowl-

edge and resources to shape our own future, not just react to it. To do any less is to concede defeat."

This summarizes Panavision's view and, I hope, that of many of your readers.

— John Farrand
President
Panavision
Woodland Hills, CA

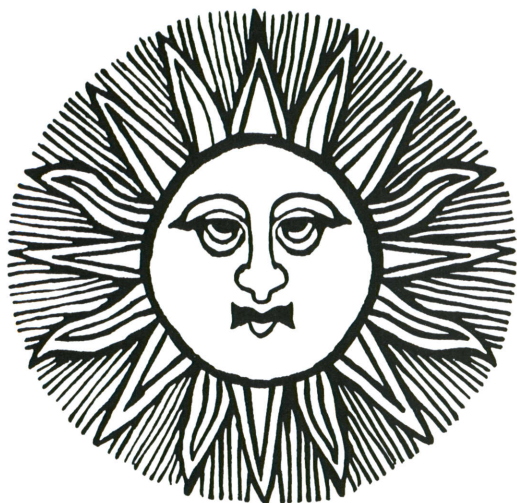
AC's Stock Rises

I'm studying cinematography at Columbia College-Chicago, and I'm writing to thank you. I recently transferred to Columbia from another school in Arizona, and since I first began shooting and lighting film, I've read *American Cinematographer*. Each month I look forward to a new issue, which allows me to read about what other cinematographers are doing and how they're doing it. [I can] follow and predict the new trends, and read up on the newest equipment and techniques. The magazine introduces me to new ideas that I can try, or to ideas that [allow me to] say, "Hmmm, I've been doing that for a while now."

Most recently, the two-part series on testing film stocks [was] one of the best presentations AC has made. As a student and independent, I rarely have the resources to do proper tests for a film, and to be able to just open up to a page and see the results of a particular process is an amazing thing. It's also very helpful to be able to show these images to a director so that he or she can better understand what I'm talking about.

I've never once been disappointed with AC — it seems that your magazine just continues to get better and better! Once again, on behalf of myself and my peers who have expressed the same to me, thank you for all the wonderful work. It's an example of the highest quality out there and helps set an example for what we should all be striving for: perfection.

— Jayson Crothers
Chicago, Illinois

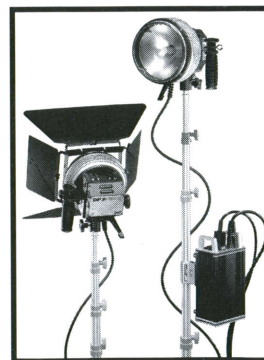


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Global Village

Nature Calls — and Cameras Roll — in *Wild Things*

by Naomi Pfefferman

Near a primitive mountain village in Nepal, a cinematographer hangs off a 300' cliff with his Sony PC-1 video camera in order to photograph a villager gathering honey from the swarming beehives on the rock.

In the Komodo Islands of Indonesia, an entire camera crew shoots from high in a tree after being chased there by hungry, man-eating Komodo dragons.

In Australia, a cinematographer holds his ground as a Tasmanian devil attacks his Sony Betacam 600.

And under severe weather conditions near Norilsk, Siberia, a camera crew barely survives a harrowing helicopter ride in white-out conditions while trying to locate the area's annual reindeer migration.

Welcome to the sets of *Wild Things*, the globe-trotting animal-adventure television series in which cinematographers brave fierce climates, remote locations and rugged terrain to capture rare footage from the Arctic Circle to the African jungle. Each hour-long show offers the kind of close encounters one would expect from creator and executive producer Bertram van Munster, a pioneer in "reality" television thanks to his eight-year stint as producer of *Cops*.

Van Munster, a Holland native and award-winning cinematographer who has shot high-end commercials, network specials and National Geographic Society programs — as well as a significant portion of a recent episode of *The X-Files* shot in *Cops* style — says he envisioned *Wild Things* as a melding of reality TV and wildlife film-

making. Call it cinéma vérité on the Serengeti. "I wanted viewers to have that feeling of being in the moment with the crew, of experiencing exactly the same things at exactly the same time,"



he says. "I like my cameramen to shoot very close to the subject, and I always have someone simultaneously shooting what's happening behind the scenes in real time, which shows just how challenging it is to do what we do."

Van Munster didn't hire only wildlife photographers to shoot his action-adventure series, which is distributed by Paramount Domestic Television and is now broadcast in at least 160 markets. His 15-odd camera crews also include photojournalists, documentary cinematographers and "heavy-duty war cameramen who have seen all the conflicts in places like the Congo, Soma-

lia and Afghanistan." In the field, the cinematographers mainly utilize the Sony Betacam 600, which is capable of braving "the extreme conditions of heat, cold, salt water, jungle, sandstorms and rattling around in Land Rovers for hundreds of miles in dozens of countries."

Very little lighting or filtration is used for the program. "The neutral-density filters are built into these cameras, so you can just dial in the neutral density for whatever your needs are," van Munster explains. "Under normal conditions, we shoot at 0db. In very bright conditions, we can go to minus db and take some light away. At dusk, we shoot at 9db, and at night, we do not go beyond 12db because it simply becomes too grainy." He adds that he prefers the Fujinon 12:1 or 14:1 zoom lenses because the shorter lenses are more practical for handheld camerawork.

His crews always carry underwater camera gear in order to be ready for any possibility. Two Sony PC-1s are also at hand so the producer or camera assistant can capture activity behind the scenes. "You can put a Zeiss lens, a really nice piece of glass, on the PC-1 [and get great results], even if it is only a one-chip camera," says Kenneth Corben, one of the show's cinematographers. Weighing only about two pounds, the PC-1 was light enough to accompany cinematographer Jeff Cooke during his grueling 90-minute suspension off the cliff near Landrung, Nepal.

When crew members place the little digital camera inside an animal carcass, where it can be activated via remote control, they call it the Carcasscam. "It's a great way to photograph feeding lions and vultures," van Munster says. "The camera is inside a metal housing we had specially designed for the purpose, so the animals can't swallow it."

It's a good thing the PC-1 is relatively inexpensive. "We've gone through 40 or 50 of them in the past three years, because they end up in very tricky spots," van Munster explains. "They've been bitten by crocodiles and run over by cars."

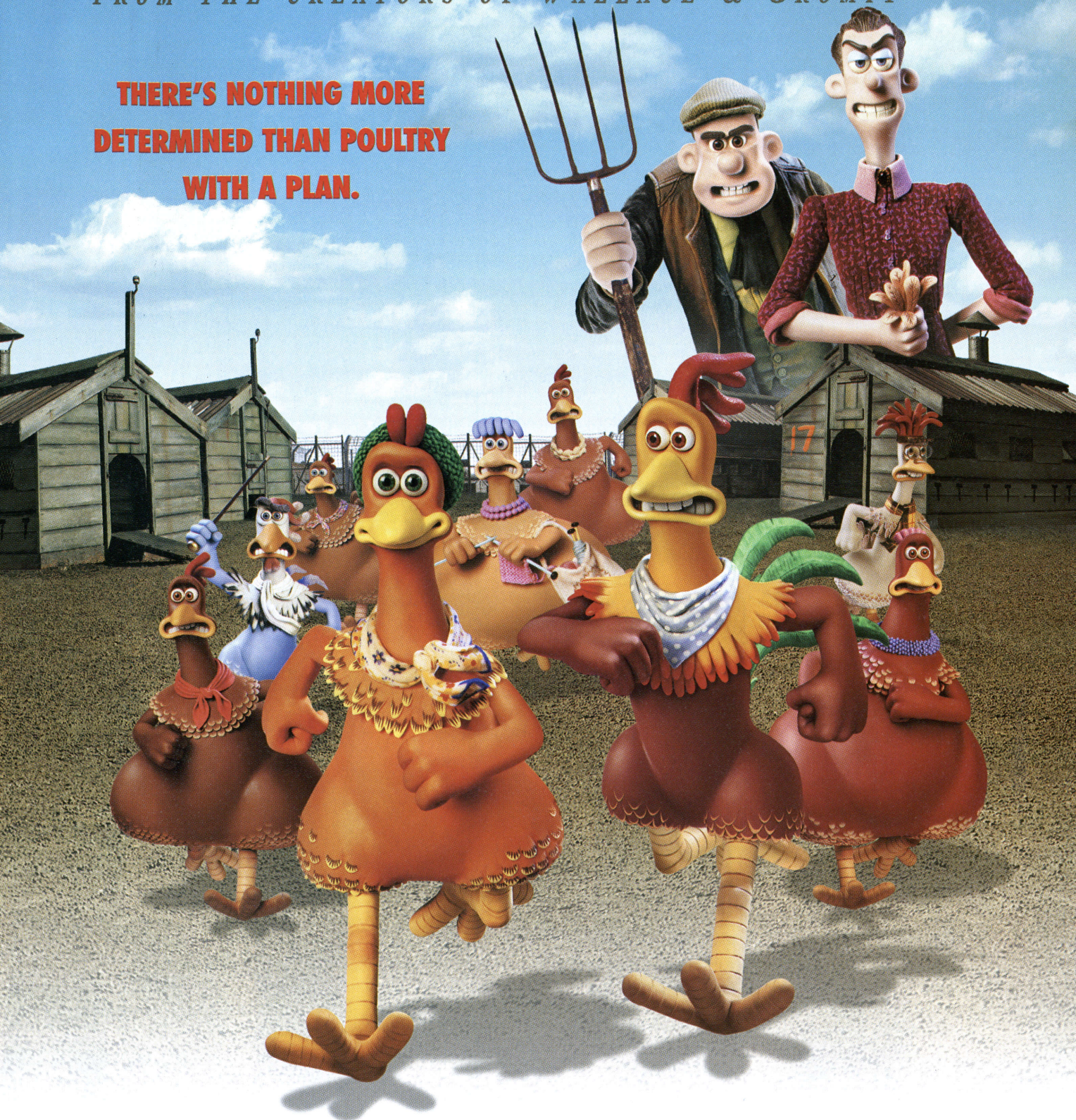
In order to capture dangerous hippopotami underwater, the teams utilized the Hitachi Super 8 video

Creating "cinéma vérité on the Serengeti," a *Wild Things* camera crew confronts its subject, while executive producer and cinematographer Bertram van Munster bravely turns his back on a cheetah during a shoot.

Photos courtesy of Paramount Pictures

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CHICKEN RUN

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A hair-raising encounter with a shark is par for the course on the program, which sends cinematographers to remote locations and requires them to brave rugged terrain, difficult climates and the always unpredictable animal kingdom.

camera, no longer in production, which has a detachable, wide-angle lens that is about 1 ½" in diameter and can be immersed in up to 10' of water. "We detached the lens, connected it to the camera body with a 100' cable and floated it the water with some camouflaging branches," van Munster recalls. "That way, we were able to photograph some unique hippopotamus behavior without risking our lives."

All of the cameras are always ready to go. "They're never in the camera cases while we're traveling," he reveals. "The rule is, when you leave your hotel room, whether it's 5 a.m. or midnight, the camera is in your hands."

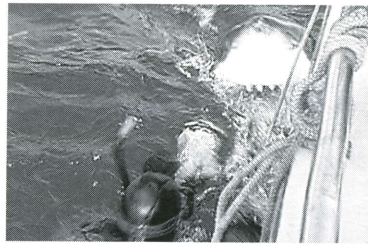
Adventure is never far away. In the green swamps of Llanos, Venezuela, for example, cameraman Ed George encountered a 16' female anaconda entangled with at least a dozen males in a "breeding ball." The cinematographer was helping biologist Jesus Rivas bag the reptiles for some tests — someone else was holding the Betacam — when the female suddenly hissed loudly and bit George's hand under the water. Fortunately, someone had already dunked the PC-1 into the murky swamp, and the camera captured the strike. Though scraped and slightly bloody, George grinned. "Another day in the glamorous world of filmmaking," as one crew member puts it.

That kind of adventure is just a day in the life of Corben, a former second-unit director of photography on TV's *Silk Stalkings* who once turned down law school to explore the world through the eye of a camera. As a cinematographer, Corben has survived two plane crashes (he managed to save the film); the worst storm ever recorded in the Bering Sea; a malfunctioning experimental rebreather that left him temporarily blind in 500' of water off Palau; a Zapatista rebel commander who demanded, at gunpoint, to know whether his camera was linked to the CIA; an explosion of the lethal Popo volcano in Mexico; and several close calls with sharks.

One risky encounter took place off the coast of South Africa in the summer of 1999, when Corben donned a drysuit

before plunging into cold water that was teeming with Great Whites. In hand was his trusty Sony VX-1000, a three-chip digital camera sheathed in an underwater housing by Gates Underwater Products. To augment the VX-1000's built-in zoom lens, Corben utilized a .5 wide converter with a +1 diopter, which he knew would enable him to fill the frame with a 16' shark while hovering just six feet away from the creature. "Through a series of tests, I determined the best combination of diopter and wide-angle converter, taking into account that subjects underwater are magnified by 25 percent," he recalls.

"Because focus is from the dome to infinity, you have less concern about focus and you can concentrate on attacking the subject matter," he continues. "I



don't have to rack focus, so I can just pay attention to composition — and I can pay attention to where the sharks are so I don't get eaten!"

Corben, who has performed tests on the digital Betacam and high-definition camera systems for Sony, used one of his favorite white-balancing tricks for shooting in blue water. "I cheated the camera," he reveals. "A video camera has to know what color white is under the given lighting conditions, so I took a ¼ blue gel, put it over the white card and essentially told the camera that *that* color was white. It's a great little trick that gives you beautiful color detail underwater."

"If I'm in green water, I use a ¼ green gel," he adds. "The technique works great across the board, whether I'm using low-end cameras or super-high-end equipment."

On a sunny July day in South Africa last year, Corben and his camera were hovering about six feet away from shark expert Mark A. Marks, who is

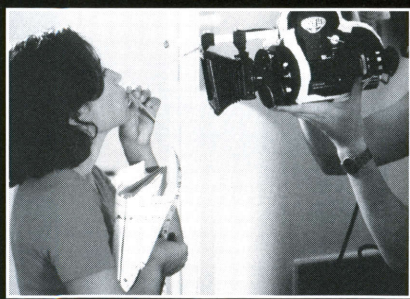
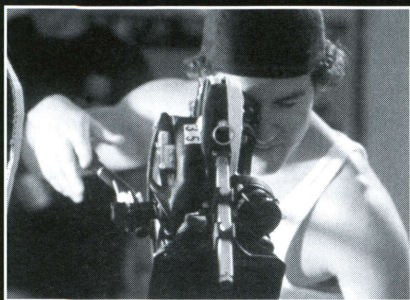
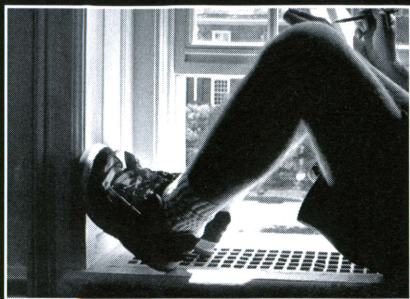
known for swimming with Great Whites without using a protective cage. The animals were agitated during the shoot, and at one point a 16-footer lunged at Marks and then at Corben, who pushed it away by gently pressing its gill plate with the still-rolling VX-1000. It wasn't the first time the cinematographer had repelled a Great White. "I do a lot of one-handed camera work underwater," he nonchalantly notes, "because I need my other hand free to push the sharks away."

Another of Corben's favorite *Wild Things* assignments was shooting orcas in Norway for three weeks in October of 1999, when he spent three hours a day in the 34-degree water, sometimes with snow falling overhead. "I slipped into the fjord with my argon-injected drysuit, a rebreather and an underwater communications device," recalls the cinematographer, whose award-winning *Hammerheads: Nomads of the Deep* aired on the Discovery Channel in 1998.

Before using the VX-1000 under water or the Sony Betacam 600 topside, Corben was sure to let the camera, lens and housing cool off for at least an hour on deck. "I had to reduce the temperature slowly to ensure that when I turned on the camera in the cold air or the cold water, it didn't malfunction or fog up the lens."

Corben also had a strategy for approaching the orcas. "In filming whales and dolphins, I've learned that they're very acoustic, so I always sing to them underwater," he notes. A three-year-old male was singularly impressed: he did a headstand for Corben, bobbed his head for 30 seconds, disappeared and returned with a gift. "He spit out a fish for me," says Corben, who is now working on a large-format film, *White Shark*, that will be shot with the Sony CineAlta HD video camera in 3-D and transferred to 15-perf 70mm film. "He fed me for singing a song to him!"

Van Munster was impressed with the footage, which, in true *Wild Things* style, captured the unexpected. "It's a prime example of a cinematographer doing the right thing and being ready to capture the moment." ■



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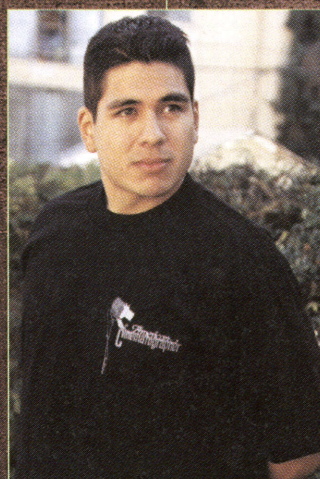
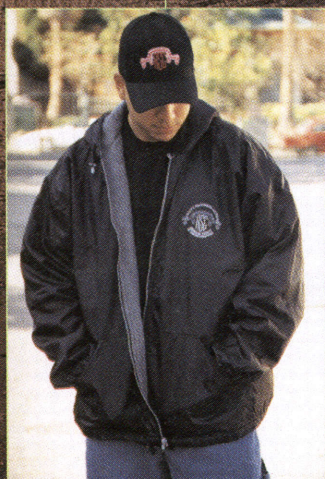
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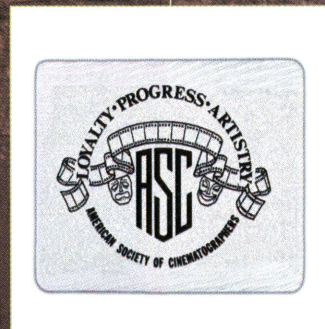
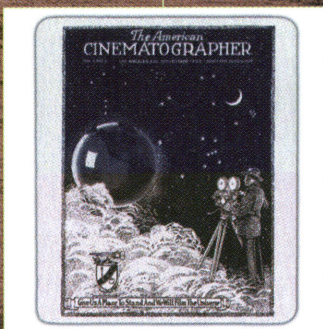
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DVD Playback

by Chris Pizzello

Interview With the Vampire

Warner Home Video, \$24.98
1.85:1 (16 X 9 Enhanced),
Dolby Digital 5.1

The annals of Hollywood are littered with major studios' ill-conceived attempts to adapt a much-beloved best-seller for the big screen. But director Neil Jordan's *Interview with the Vampire*, based on Anne Rice's pop classic, is one of those rare cases when the studio got it right. An alternately humorous and mournful take on the vampire myth, the film is the sort of hugely entertaining but determinedly artistic and intelligent Hollywood blockbuster that has become all but extinct.

The cinematography of Philippe Rousselot, ASC, AFC (see *AC* Jan. '95) was justly celebrated for its influential use of China-ball lighting units, which lend the film a soft, subtle ambience that runs counter to the harsher, more hard-lit vampire films of yesteryear. *Interview* is a real treat for the eyes, and Warner Home Video has done it justice with this new and improved DVD (the original DVD issued in 1997 had no extras). One might mistake the look of the transfer as being slightly flat at times, but the film's hues (in particular the vampires' flesh tones) are intentionally pale and delicate, and the disk perfectly captures this melancholy visual palette.

For extras, viewers get a well-informed director's commentary from Jordan, who offers some amusing comparisons between vampires and Hollywood stars: the thirst for immortality, the isolation from the rest of humanity, the inability to "go out in the daylight." An excellent 30-minute documentary, "In the Shadow of the Vampire," is also included; it covers virtu-

ally every aspect of the project except the much-ballyhooed controversy over the casting of Tom Cruise in the pivotal role of the rakish Lestat. Additionally, the disk offers a few cast bios, a theatrical trailer and a promising-sounding supplement, "History of the Vampire," that turns out to be a mere Web link.

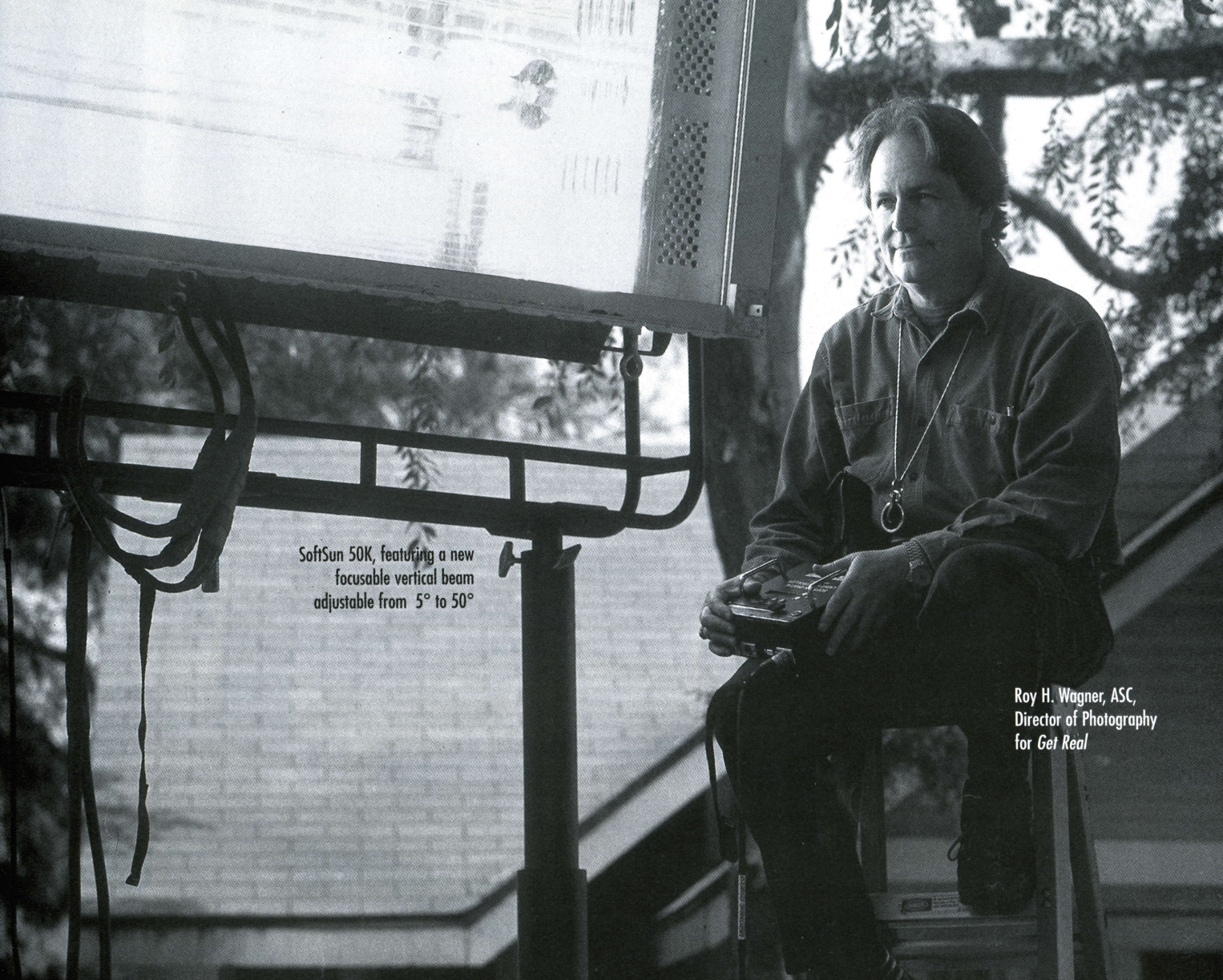
Blue Velvet

MGM, \$24.98
2.35:1 (16 X 9 Enhanced),
Dolby Surround 2.0

The restorative powers of the DVD format are evident in the first few seconds of David Lynch's 1986 masterpiece *Blue Velvet*. The opening image of the film — blooming red roses and an immaculate white picket fence, set off against an eerily perfect blue sky — virtually pops off the television screen. Thankfully, the rest of the DVD transfer hews to this standard, featuring beautiful colors, admirably strong blacks (and boy, does Lynch like his blacks), good shadow detail and very few noticeable age artifacts.

This is a film that must be seen in its original 2.35:1 aspect ratio, for Lynch has always been a painterly film stylist who uses every inch of the frame. By hitting the pause button during any number of scenes in *Blue Velvet*, the viewer can study the influence of Edward Hopper on Lynch's bold compositions, making one wonder how this film was ever shown in a pan-and-scan format. With the help of cinematographer Frederick Elmes, ASC, who lent the film a moody and determinedly anti-slick lighting scheme, Lynch created a portrait of the shadow world lurking in peaceful suburbia, and his dark tale hasn't lost a trace of its power.

This is a bare-bones DVD — the



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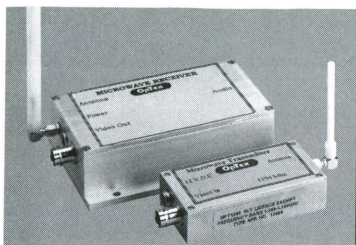
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only extras are a grainy trailer and a four-page booklet. While a director's commentary from Lynch would undoubtedly be fascinating, it has to be said that the secrets of some films are best left unexplained.

With the curious young protagonist Jeffrey (Kyle McLachlan) serving as our stand-in, we enter into a mystery world of unspeakable horrors — yet at no point can we take our eyes from the screen. Much of the weird spell cast by *Blue Velvet* is due to Lynch's unsurpassed attention to cinematic texture — the blood red of torch singer Dorothy Vallens's lipstick, the eerie hallway hum in the Deep River Apartments, the jazzy foreboding of Angelo Badalamenti's score — and this DVD has captured it all with the utmost faithfulness.

Being John Malkovich

USA Home Entertainment,
\$24.95
1.85:1 (16 X 9 Enhanced),
Dolby Digital 5.1 and 2.0

The premise of *Being John Malkovich* reeks of self-conscious absurdity: Craig Schwartz (a straggly-haired John Cusack), a sad-sack puppeteer trapped in temp hell, comes upon an office door that serves as a portal into the brain of semi-famous American thespian John Malkovich. Visitors can see through the actor's eyes for 15 minutes, after which they are abruptly ejected into a ditch off the New Jersey Turnpike. Along with an attractive but supremely bitchy co-worker (Catherine Keener, who earned an Oscar nomination for her performance), the puppeteer uses his newfound discovery to start a unique side business: paid visits to the Malkovich cranium. From there, complications of an extremely unpredictable, creepy and even metaphysical nature ensue. In fact, this reviewer *still* can't quite get his head around the film's final mind-bending twist.

The film easily could have turned insufferably arch, but its genius lies in first-time feature director Spike Jonze's restrained, sober directorial tone. Virtually nothing in the style of the piece calls

attention to itself, including the documentary-like camerawork of cinematographer Lance Acord. Most of the film seems to be shot with a bobbing, hand-held camera, lending a you-are-there feel that effectively reduces the outlandishness of the premise. And there have been few feature films in recent years with such unrelentingly ugly lighting. That's not a knock, though, because the strategy is purposeful — the fluorescent hell of the puppeteer's office (located on the "7 1/2th floor") and the utter gloominess of his apartment effectively ram home why a visit to someone else's reality could be such an addictive kick.

Being John Malkovich has been given a decent but unspectacular DVD transfer, with accurate colors and good sharpness but slightly soupy shadow detail in the darker scenes. As far as the supplemental material goes, you wouldn't expect the standard making-of featurette, cast bios and director's commentary, would you? USA Home Entertainment has matched the originality of the film with the most unusual DVD extras ever conceived. Two of the most amusing are slight cheats — "7 1/2 Floor Orientation" and "American Arts & Culture Presents: John Horatio Malkovich, Dance of Despair and Disillusionment" are both *in* the actual film — but the rest are new and offer gleefully subversive surprises.

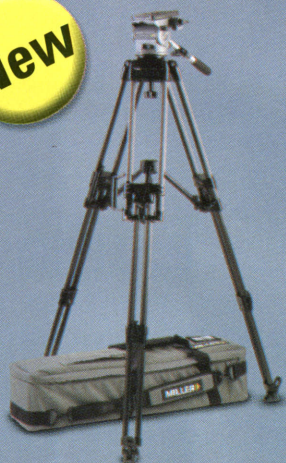
There are four extremely inventive TV spots and a generous helping of Jonze's off-kilter set photos. "An Intimate Portrait of the Art of Background Driving" is a fly-on-the-dashboard account of what bored extras chat about while driving cars to provide background action. "A Page With Nothing On It" gently goofs on the whole idea of DVD supplements. "An Interview With Director Spike Jonze" presents the director behind the wheel, chatting somewhat distractedly about his first feature before he... well, you just have to see it to believe it. ■

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Production Slate

compiled by Douglas Bankston



Dealer's Hand

by Chris Pizzello

It took a while, but the roulette wheel finally found director Mike Hodges's number.

Seemingly every summer, a small film comes out of nowhere to present a thoughtful alternative to the popcorn flicks that exert a strong hold on American megaplexes. Clearly, this year's "little film that could" is Hodges' *Croupier*, a three-year-old British art film set in the seedy world of London gambling. Ironically enough, the picture

was initially disowned by the British television station that had commissioned it.

After it spent a year gathering dust on the shelves of Britain's Channel Four, *Croupier* was finally given a one-week theatrical run by the British Film Institute — as a double feature with *Get Carter*, Hodges' classic '70s gangster film. Critical reaction was mixed, and *Croupier* seemed doomed to the video-store ghetto on both sides of the Atlantic. But last summer, after a successful screening of the film during a retrospective of Hodges' career at the American Cinematheque in Los Angeles, the New York distribution company The Shooting Gallery chose *Croupier* to be part of a six-film series that would screen in 17 cities across America. Critics in this country, starved for intellectual content, gave the complex *Croupier* well-deserved raves, and the film garnered word-of-mouth attention and began doing repeat business. At press time, *Croupier* had grossed more than \$600,000 in six weeks, and The Shooting Gallery had decided to book it in more than 100 cities across the country.

"It's a bit of a filmmaker's fairy tale," a vindicated Hodges exults over the phone. "There's nothing more painful than making a film for the cinema and having it not be shown in the cinema! *Croupier* is an internal film, and its mesmeric quality really only works fully on the big screen, in my opinion. I'm delighted and surprised by what has happened."

Croupier is the story of Jack Manfred (Clive Owen), a struggling novelist who takes a job as a croupier —

or casino dealer — to make ends meet. With his voyeuristic nature, Jack is the perfect man for the job, theorizing that all gamblers are born to lose. When he begins using his new job as inspiration for a novel, Jack gradually gets sucked into the gambling world's darker corners, which unsettles his relationship with his girlfriend, Marion (Gina McKee). Jack eventually learns the hard way that even croupiers — both in the casino and in life — are subject to the whims of chance and the "dealer's hand" of fate.

The film's enigmatic, serpentine screenplay was penned by Paul Mayersburg, best known for scripting Nagisa Oshima's *Merry Christmas*, Mr. Lawrence and Nicolas Roeg's *The Man Who Fell to Earth*. Hodges immediately understood that the casino in *Croupier* was a metaphor for something larger. "I felt the story had real resonance for contemporary audiences," he says. "We have a sense these days that we have complete control over our lives, partly because our lives are so full — we have our Filofaxes, our mobile phones, our BMWs. A certain segment of society, at least, has apparent control over everything, which of course is truly mythical. You can be crossing the road and get knocked down by a car, or you can go to the doctor's and learn that you have a terminal illness. All sorts of things can happen to us, and the film reminds us that life is really to do with chance as much as anything else."

The film is also unusual in that it explores not the gamblers, but the *dealers*. "That way around, you get closer to what gambling is really like," Hodges

Jack's back: Clive Owen portrays a reformed gambler and aspiring author who infiltrates a London casino in *Croupier*, an existential take on the film noir aesthetic.

Croupier photos by Simon Mein, courtesy of The Shooting Gallery.



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Hang on tightly, let go lightly: Jack has a posh tête-à-tête with Jani (Alex Kingston), a compulsive gambler who harbors her fair share of secrets.



theorizes. "When you're gambling, you're in a sense unaware because you're on such a high, whereas the croupier is looking at it like a voyeur, which is a quality I wanted to capture in this film."

Hodges knew that such a cerebral script — highlighted by Jack's sardonic voice-over commentary — would be a challenge to render in cinematic terms. "Paul and I worked on the script for close to six months before shooting," the director says. "We added loads of elements that were never in the original draft. For example, the croupier's apartment was originally on the first floor. That didn't make sense to me, because I found his character very much an underground person. I said, 'We've got to set him in a basement.' What that meant was that throughout the film, you never see any natural light at all; you never see the sky. I even decided that a tennis match, which was always in the script, [should take place] in the evening with floodlights. As in a casino, there is no natural light at all."

Hodges' grand scheme was to subtly merge the dueling worlds of his protagonist. "I wanted to extend the elements of chance that happen in a casino into his personal life," he explains. "I did that both through avoiding available light and by carrying over the sounds of the casino into his personal life. The whole beginning of the film is the sound of the ball rolling around the

roulette wheel, and when accidents happen, the ball lands and the number is up on whatever incident is being revealed to the audience.

"The other visual element I contributed was mirrors. In the script, there was no reference to mirrors at all. Jack looked into a mirror a couple of times, but I extended the idea into the casino itself. I went to look at casinos in London, and I found them very boring, so I decided I would use mirrors on the walls and have a mirrored staircase going *down* — again, you go down to the casino, which is another basement. The mirrors also suggest the [schizophrenic nature] of Jack's character, as well as the narcissism."

Hodges also fleshed out the visual atmosphere of *Croupier* with a novelistic attention to detail. "Paul had written in this romantic idea of a writer always wearing a hat," he says. "It's an idea from the '40s — people like private eyes and journalists would wear hats. It was an odd idea, and I had to expand on it to really make it work. When Jack puts the hat on, it's almost as if he's putting a thinking cap on so that he can write. But later in the film, you learn that it's his girlfriend who likes the hat on him. It's her perception of a writer, and she wants to live with a writer, not a croupier. So when he's working and doesn't have the hat on, she *puts* it on him."

To translate these ideas to the screen, Hodges called on veteran cine-

matographer Mike Garfath, BSC, with whom he'd already worked on the films *Squaring the Circle* (1982) and *A Prayer for the Dying* (1987). Among Garfath's other film credits are Mike Newell's *Soursweet*, Jonathan Lynn's *Nuns on the Run* and Colin Gregg's *Lamb* and *We Think the World of You*. He has also photographed numerous award-winning commercials.

"There's never an ego problem with Mike," Hodges comments. "I'm not being rude, but some cameramen can be fairly egocentric. There are some great cameramen who can sometimes take over and do the kind of lighting I don't like — burnt-out windows and foggy interiors. The look of a lot of films these days seems to have been derived from commercials. Mike always gives me a clean, well-lit, definitive look, almost like a black-and-white graphic. I find the look of a lot of today's films messy. When I look at great literature or great paintings, it's the simplicity that always strikes me. It's a struggle to achieve simplicity, but that's the discipline you have to try to [impose]."

Garfath's foremost challenges were the casino scenes, filmed at Info-Studios in Mannheim, Germany. Per Hodges' instructions, the set was strewn wall-to-wall with mirrors by production designer Jon Bunker. "Mike didn't want the casino to be a comfortable place," Garfath says. "He wanted the feel of the casino to echo the discomfort that Jack has as a character, so he came up with the idea of giving it an austere feeling with all of the mirrors. As you can well imagine, that presented enormous problems for the operator, Gordon Hayman, and myself, because everything we did was reflected!"

To get around the problem, Garfath decided to cleverly employ the mirrors themselves that were in shot. "In the casino, we used four free-standing columns that were also mirrors," he explains. "By having them free-standing, we could push them to lose the reflections of our camera — a Moviecam Compact or Arri 435 — and our lights. That was an enormous help, and it gave us a great opportunity to

reflect areas of the casino that we didn't mind seeing. [For example], I remember a blackjack table that was shot right against one of the walls. In the background, we used two free-standing 8-foot by 4-foot mirrors side by side, and we angled them forward at the center a bit, which meant the reflections fell to each side of the camera."

Because of the reflection problem, Garfath had to light primarily from above and use the free-standing mirrors to camouflage his fill light. "I told the production designer that I wanted the ceiling to be at a reasonable height, because I knew I wouldn't be able to put ceiling pieces in," he details. "It ended up being about 16 feet high. The big problem was lighting the people sitting at the roulette tables. With all of the light coming from above, the challenge was to get light onto their faces, because everyone at a roulette table looks *down* at what's on the table. I built some space lights which provided a soft overhead source, and I put one over each of the eight gambling tables. On the floor of the casino I used Kino Flos for fill."

Like many of the characters in the film, a few shots are not quite what they appear to be at first viewing. In one scene, the camera starts off on a slightly shimmering close-up of Jack, only to pull back slowly and reveal that the whole scene is a mirror reflection in his casino manager's office. "That was a shot that the operator, Gordon, picked up on and designed," Garfath says. "The interesting thing about it was that our backlight became the frontlight. I lit the scene with normal studio incandescent lights — Arri 1Ks, 650s and 300s, which were my key lights on the shoot — just out of frame on the floor. There were two wall lights and a table lamp in the office, so I tried to make it look as if the scene was lit entirely by the practicals. Because virtually the entire shoot was either at night or in interiors, I shot the whole film on Kodak Vision 500 [5279] stock, which gave me many opportunities to use practical lights and almost use them as light sources."

Hodges' minimalist aesthetic extends to the camera movement in the

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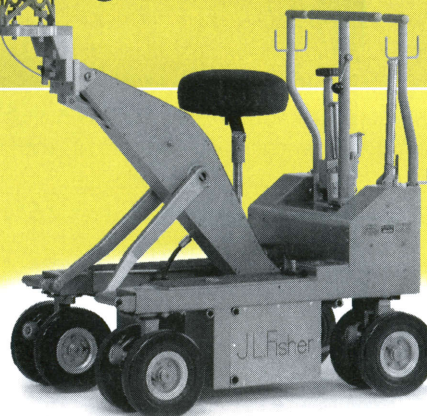
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We've Moved



An artist (Jon Favreau) and a journalist (Famke Janssen) test their romantic compatibility in *Love and Sex*.

film, which is used almost as a visual pun in one brilliant, slow-motion shot early in the film. The camera revolves around a stationary Jack as he mans his station, echoing the movement of a roulette wheel circling its still center. Garfath put the camera on a small jib arm on a circular dolly track and cranked the camera at 36 frames per second. "It's the stillness of the film, and in particular the stillness of Clive's performance, which is absolutely integral," Hodges comments. "As Jack says in the film, he is the center of the wheel."

During his preproduction visits to London casinos, Hodges came upon a visual detail that he sensed would be the perfect symbol with which to end the resolutely unsentimental *Croupier*. "Casinos now have this hole in the table where all of the chips are swept down," the director explains. "They drop down below into a machine, where they're sorted again so that the croupier can keep feeding them back onto the table. That was never in the script, but when I spotted the black hole, I'd never seen such a metaphor for gambling in my life! It's right in front of all the punters at the table — people sit there and watch their chips literally go right down the toilet. That's why the film ends with the camera going down *into* the black hole. Jack looks at the audience, almost smiles, and down go the chips with the camera following."

Modern Love

by David E. Williams

An inventive comedy written and directed by Valerie Breiman, *Love & Sex* is a quasi-autobiographical story that documents the frustrated passions of journalist Kate Welles (Famke Janssen), whose perception of romance and relationships changes after she falls for an abrasive-yet-lovable painter, Adam Levy (Jon Favreau). After making its world premiere at this year's Sundance Film Festival, the picture was acquired by Lion's Gate Films and is set for release this month.

Director of photography Adam



Kane notes that *Love & Sex* had languished in development for about five years before finally finding production financing. "I first interviewed with Valerie about shooting this film several years ago, but the female lead dropped out, so it didn't happen," the cameraman recalls. "Then, last summer, I got a call from one of the producers, Tim Bogart, who asked if I was interested in shooting a romantic comedy directed by a Valerie Breiman. It didn't click in my head right away, but I finally realized it was the same film, and I immediately said yes!"

Kane's interest in filmmaking was partially inspired by his father, Artie Kane, a successful composer and conductor who contributed music to many television shows and feature films. As a student at New York University, Kane initially concentrated on sound work, but he was impressed by the artistry exhibited by the cinematography students, and the creativity that the position behind the camera offered. He soon began studying lighting and moved to Los Angeles to attend the American Film Institute. After graduation, he began shooting commercials, music videos and, later, theatrical and television features,

including *The Double-O Kid*, *Judgment*, *The Clearing*, *A Million To Juan*, *Bitter Harvest*, *Corporate Ladder*, *Renegade Force*, *No Code of Conduct* and *The Boondock Saints*. Most recently, Kane shot the main-title sequence for the hit action film *Romeo Must Die*, directed by Andrzej Bartkowiak, ASC.

Asked to describe his on-set rapport with rookie director Breiman, Kane replies, "I've worked with a lot of first-timers, and my general approach is to be as nonthreatening as possible. For a lot of people, the cameras, lights and cinematography nomenclature can be very intimidating, so I tried to take the technical details out of our discussions and get Valerie to discuss what she wanted in terms of the story and its emotional context. Is the scene claustrophobic for the actors? Should the tone be geared toward exhilaration? Those are the ways I might describe my reactions to a script as I'm reading it, which drives the way I'll imagine shooting it."

Kane often uses visual references to illustrate his ideas, and during his first meeting with Breiman, he described *Love & Sex* as "a female *Annie Hall*." However, he notes that "I didn't feel that

Love and Sex photos by Cass Bird and Dale Robinette, courtesy of Behaviour Worldwide

the movie should look like *Annie Hall*, so I didn't want to use [ASC member] Gordon Willis's top-light approach. I [felt] the characters should be presented in an open, accessible manner, and that there should be a certain warmth about the way it was shot that would invite the audience into the story. Seeming 'natural' was important, and I think a strong element of that comes across on the screen. Of course, a lot of that came through in the performances by Famke Janssen and Jon Favreau. They developed a good sense of chemistry; without that [rapport] between the actors, nothing the cinematographer does is going to make it any better than it seems."

Annie Hall further suggested creating compositions that would allow the characters to appear in the deep background and then walk in the foreground as the scene unfolds. "We also liked the way that film used wide, master-like shots that would allow the action to play out," Kane adds.

One example of this technique is a short scene in which a solitary Adam waits for Kate in a hospital emergency room. She enters, and he embraces her. "It's a silent scene," Kane notes, "but the way they hold each other tells that the audience that Kate has miscarried the baby they were going to have. I like simple things like that. Although Valerie and I had planned more extensive coverage of the scene, and we did have a second camera tight on Jon, it played much better as a single shot."

Another film that influenced Kane and Breiman's visual approach was the 1996 comedy *Flirting With Disaster*, shot by Eric Edwards. Specifically, Kane liked "the way the frame was often filled with set dressings, whether they were book-cases or tapestries on the walls, which added a lot of texture and helped create some depth. I worked with our production designer, Sarah Sprawls, to achieve that."

One of Kane's first suggestions was to shoot *Love & Sex* on Fuji film stocks. "I feel that Fuji has a more responsive color palette in terms of certain color vibrancy," he opines. "Valerie was interested in that, but she

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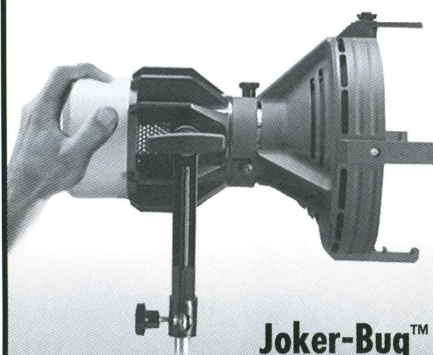


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wanted to be shown the difference
between Kodak and Fuji, so we did a
series of tests."

For his tests, Kane drafted his first
assistant, Darin Moran, as a model, and
posed him with a MacBeth color chart,
shooting him with 500-speed Fuji Super F
8572 and Kodak EXR 5298. The camera-
man notes that because *Love & Sex* had
a modest budget, he was limited to using
certain less-expensive stocks — which
had the producers rooting for Fuji at the
outset, simply because of its lower cost.
"[But] I was thinking about Fuji from the
beginning," he maintains. "Looking at
the tests side by side on dueling projec-
tors at Fotokem, we could really see the
difference on the MacBeth chart. After
some discussion, Valerie was sold on the
idea, though she was still a little nervous
because Kodak is supposedly a 'superior'
stock. I think they're both excellent, but I
feel we squeezed [a bit more] out the
photography because of what the Fuji did
for us."

Kane contends that Fuji's 8572 is
comparable to Vision 5279 in terms of
underexposure latitude. "The 72 is a
reformulated version of Fuji's 8571, their
old 500-speed stock, which wasn't nearly
as broad in the underexposure area; the
72 is a great improvement. However, the
Fuji 72 does fall a bit short when it comes
to overexposure — it blows out a lot
faster than Kodak's does. But as long as
you're aware of that limitation, you'll
have no problems."

Kane used the high-speed 8572
throughout most of *Love & Sex*, yet relied
on mid-speed and low-speed stocks for
exteriors and interiors "that opened into
outdoors and [where] we could see exter-
iors behind the primary subjects. How-
ever, we did have a lot of locations
and closed interiors — on just a 20-day
shooting schedule — and the 500-speed
8572 helped us save time by allowing us
to light economically. We had all of the
tools we needed but a small crew, which
made it that much more important to
light things in the most expedient
manner. By doing that, we could squeeze
a few extra shots into the day's sched-
ule." He adds that the picture was



finished on Fuji print stocks as well, with color timer Chuck Winston supervising the process at Fotokem in Burbank.

The effect of Fuji's color "vibrancy" came into play specifically when Kane photographed a series of grotesquely humorous paintings ostensibly created by Favreau's character. "The paintings had a tremendous amount of saturation," he says, "and that was a conscious choice on our part, because we had them commissioned for the film. We had discussions with the artist about how vibrant 'vibrant' was, and what colors and details we wanted to have jump out at the audience. It was important to render them in a certain way."

Kane confesses that he has long been a closet Fuji fan. "It's not right for every picture, but I also don't necessarily think any film stock, lens or filter is the right one for every film. I'm a believer in allowing the story and the mood to dictate the style, rather than bringing it to the picture myself. I suggested to Valerie that we use a Tiffen 812 warming filter on the lens throughout much of the shoot to bring out the warmth we were looking for, and it worked pretty well. We had to be careful with it because Jon Favreau's skin tone tends to go a bit red, so we never used it for his close-ups. On the other hand, Famke's complexion is more olive, so she benefitted from it."

Kane's lighting approach was driven by what he was offered at the film's many locations (there was no stage work) and by the fluctuating tone of the story. With a touch of frustration, he relates, "There are only so many things you can do lighting- and camera-wise in an 8-foot by 7-foot room with, as is the case so often in low-budget films, walls that are entirely off-white. It's tough to make that look rich, but I really didn't want this to be a flatly lit film, although many romantic comedies are. I tried for 'simplicity with style' — using a lot of sidelight and then going a bit edgier in spots, such as the scene in which Kate breaks up with Adam, who then, in a desperate plea, asks her to marry him.

"We staged that using the full depth of the room, so the scene ended

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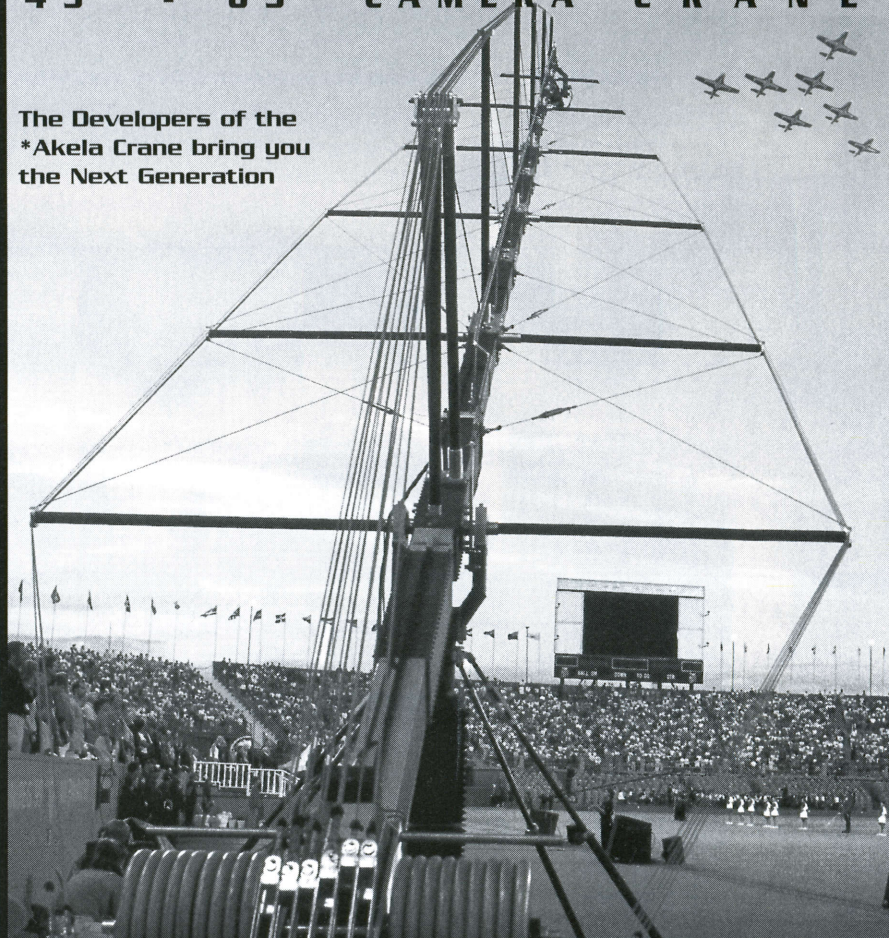
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with Kate walking out the door in the far background, in focus, while he was in the foreground with this strong half-light on him. It's a more dramatic scene, and that approach was just enough of a change to give it some emphasis without going too far.

"I had a strong obligation to Valerie to make Famke look good throughout the picture so she'd always seem sympathetic. Fortunately, she's really beautiful, but she requires very specific lighting because of the extreme angularity of her features. You can very easily cast unflattering shadows on her, so we did extensive lighting tests to figure out what her best light would be. In fact, that led to lighting each side of her face differently.

"In masters or wide shots, I lit her overall space to fit her into the environment, but we always relit her for close-ups. It was just a rule, and [everyone] knew we had to have the time to do it.

Famke takes underlight extremely well, which is contrary to what looks good on most women I've lit, but she looks great with light coming in from below her eyeline. Anything above her eyeline didn't look as good. For that reason, we always had the fill coming in from just below her chin, usually using a Kino Flo with some light gridcloth or, for daylight scenes, an HMI bounced into a 4-foot by 4-foot beadboard or a frame of gridcloth. It was always a very soft, unobtrusive light, and she took it like a dream.

"For the key, one side of Famke's face looked best with a half-light, while the other looked best with a three-quarter frontlight. That combination softened her features just enough; she's so outrageously beautiful that when you see her in person you just melt in your socks, but that wasn't right for her character in this film. We weren't trying to downplay her looks, but we did want a girl-next-door look. If we had lit her like a supermodel,

you never would have bought her character — though we did use a hardlight approach in a couple scenes in which she had to look especially beautiful."

One of Kane's few complaints about the *Love & Sex* shoot was the need to use video dailies. "They're convenient in that the director can take them home and study them for performances and compositions, but in terms of my lighting, I have yet to have a circumstance in which video dailies are useful. This is in part due to the editors' needs. The same transfers are being used for the Avid, and that requires them to be a bit brighter so that the editors can see the picture. But that blows it for the cinematographer."

Fortunately, Kane did manage to convince his producers on *Love & Sex* to print a few scenes every week in order to track his lighting and check for mechanical malfunctions (shutter problems, lens focus, etc.), which are virtu-

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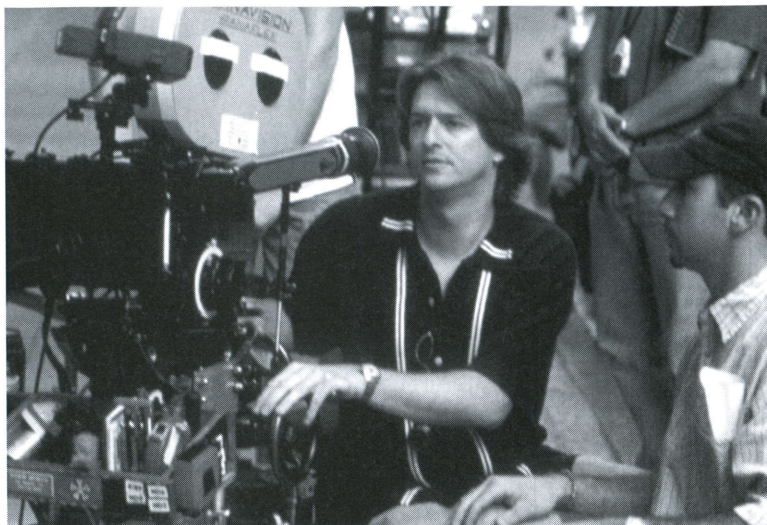
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ally undetectable in video dailies. "Sometimes there are shots that are ever-so-slightly off that you'd never otherwise notice, and they wind up in the answer print after the neg has been cut and the sound has been mixed. Then everybody is upset, but it all could have been averted by showing projected dailies," Kane observes.

Noting that *Love & Sex* is his 20th feature credit, Kane reflects, "Early in a cinematographer's career, you tend to take every job you're offered because you need the credits. But when you get to a certain point — especially if you're young — people tend to say, 'Gee, you've shot a bunch of features, but your career hasn't broken yet. What's the problem?' And that starts to work against you.

"I'm at the point where I consider a number of things when I read a script. I don't really care what the budget is, though really tight budgets are frustrat-



ing. Every cinematographer needs to shoot films that are going to be seen by audiences, whether at festivals or in theaters, because they're competing for jobs with other cameramen who have twice as many credits and better reels. Having a film on your résumé that people

are familiar with can really make the difference, even if it has less-than-dramatic cinematography. I knew *Love & Sex* had a tight budget and a short shooting schedule, [but] I also knew it had a great story that would appeal to people."

Director of photography Adam Kane describes *Love and Sex* as a "female *Annie Hall*," noting that he was inspired by the witty compositions that cinematographer Gordon Willis, ASC lent to Woody Allen's Oscar-winning comedy.



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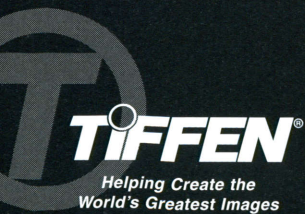
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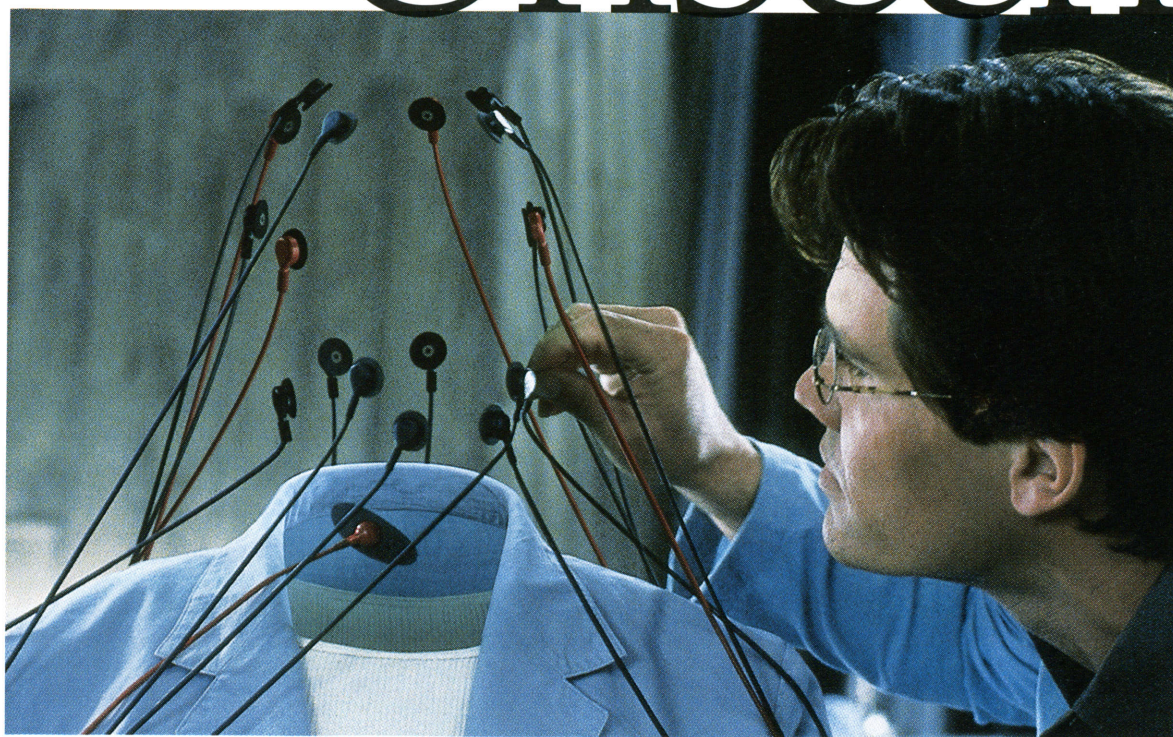


Sight Unseen

Director Paul Verhoeven and cinematographer Jost Vacano, ASC, BVK take a new stab at the theme of invisibility in *Hollow Man*.

by Christopher Probst

Unit photography by Stephen Vaughan, SMPSP



While photographing director Paul Verhoeven's latest work, *Hollow Man*, cinematographer Jost Vacano, ASC, BVK was challenged to meticulously execute the lighting of *nothing* — so to speak. “*Hollow Man* is a film about invisibility,” states Vacano, who was collaborating with Verhoeven for the seventh time. “For a director of photography, that presents an interesting challenge, because cinematographers are normally hired to shoot things we are supposed to be able to see. In CGI-effects films, you usually shoot something that is not yet there,

like the bugs in *Starship Troopers*; but in *Hollow Man*, we shot something already there that was supposed to *not* be there.”

Hollow Man follows a team of scientists, led by the brilliant but radical Sebastian Caine (Kevin Bacon), that is secretly working for the government on a formula to induce invisibility. After the group successfully tests its invisibility serum on lab rats and an ape, the overzealous Caine decides to defy the Pentagon's orders and test the serum on a human — and who better than himself? “Everything seems to work

fine,” explains Vacano. “They make him invisible, conduct research on him for several days, then try to bring him back [to visibility]. But of course, since it's a movie, they cannot make him visible again. Their methods had worked with the ape, but for some reason they don't work with a human. They're now faced with the problem of how to bring him back.”

Initially amused with the novelty of being transparent, Caine quickly becomes bored with the lab environment and his partners' incessant poking and prodding, and decides to test out his omnipotent

Photos courtesy of Sony Pictures.

power in the real world. Freed from the burden of accountability for his actions, the scientist quickly spirals into an unchecked foray of petty amusements, decadent indulgences and debauchery — that is, until the government and his partners threaten to end his revelry.

Set in a not-too-distant future, *Hollow Man* presented the filmmakers with ripe cinematic opportunities, given that the production could tap into new technologies that would allow a level of visual trickery never before achieved on the screen. Not wanting to mine the clichés of the invisibility genre — such as having a person fade into invisibility, or demonstrating that he's invisible by having a glass of water “float” in the air — the filmmakers developed a more aggressive visual strategy.

Caine's transition to invisibility would be much more elaborate, showing the various anatomical layers of the body — skin, veins, muscles, tendons, internal organs and the skeleton — being literally *peeled away* by the serum. Likewise, the filmmakers sought a much more eye-popping treatment of scenes that occur after Caine has been rendered invisible; during the course of the film, his presence is partially revealed when he enters a smoky room, walks through a sprinkler system and dives into a pool. Another way the film “reveals” the invisible Caine is through the use of a heat-sensitive camera, according to Vacano. “I was ‘lighting’ my shots by ‘painting’ with heat, mostly by using hairdryers,” he says. “The stage was cool in the morning and hotter during the day, so it was a challenge to keep the thermal images constant.

“As always with Verhoeven,” he continues, “we used Steadicam a lot, but in this film we had to use the POV of the invisible Caine as well, as a different way to ‘show’ him without seeing him. These POVs had to be different, not so smooth, so we built a ‘Shakycam.’”



Opposite: Scientist Matt Kensington (Josh Brolin) monitors the progress of invisible colleague Sebastian Caine (Kevin Bacon). This page, top: A fellow researcher cuts eyeholes for Caine after revealing his transparent features with liquid latex. Below: A flame bar and banks of Kino Flos enhance the lighting scheme in the laboratory set.

Verhoeven has a penchant for pushing the effects industry to support his fertile narrative imagination, and all of the film's participants were eager to tackle the tale's ambitious and groundbreaking visuals. Vacano joined the production fairly early in the prep phase and focused primarily on the technical requirements involved in lighting the many sets that would be constructed for the film. “I used to go into a lot of my films thinking, ‘Maybe this should be a long-lens film,’ or ‘Maybe it should be a diffused film, or a harshly edited film,’” he relates. “However, my experience was that whenever I had these wonderful thoughts about how I was going to do a film, most of the time they didn't work as expected; the film itself went in another direction. What I believe now is that a film is

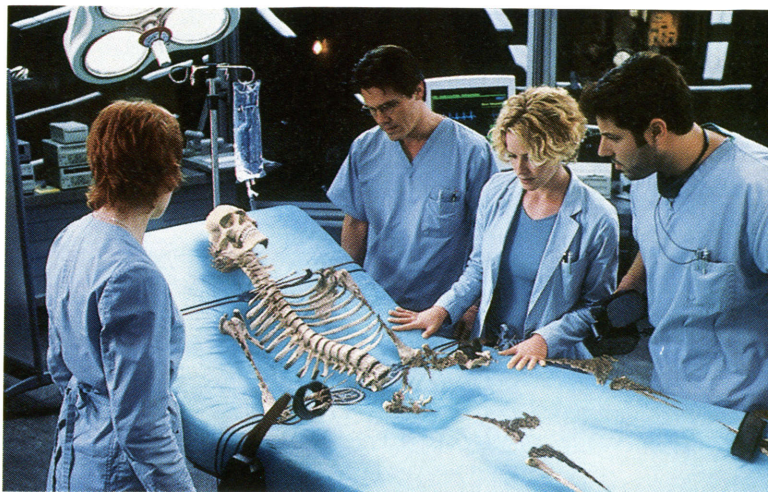
like a living structure, a living being — it depends on the director, the cinematographer, the editor, the art director and the actors to determine which way the film will go. My approach these days is therefore very different. I don't spend so much time thinking about how we should do this [or] that, and I especially do not try to think about what style the film should have. Rather, I'll say, ‘Let's just start the film and see where the *film* wants to go.’ It's a much more organic way for the story to be told; you're not trying to force [an approach] upon it. Because I've done so many films with Paul, we don't need to talk so much about the artistic aspects. We both [know] we will feel the right way to go.”

That said, however, it should be noted that Vacano was heavily



Sight Unseen

Right: The scientific team examines Caine's skeleton during his gradual progression to complete invisibility. Below: With the help of infrared goggles, Caine and Kensington stalk an invisible ape that's escaped from the lab. Note the fluorescent light fixtures built into the walls by production designer Allan Cameron and his crew, providing practical lighting for wide shots. "The wide shots were more about the atmosphere of the sets," relates Vacano, "but for closer shots, we would have a flag or perhaps some 216 diffusion walking over the actors to take off or soften the toplight. Then we'd have other handheld lights like two-foot, 4-bank Kino Flos near the camera or Steadicam."



involved with the design of the lighting and its integration into the production design. "In a film of this nature, the art direction plays a very crucial role," the cinematographer points out. "When I got involved with the project, I began working closely with production designer Allan Cameron, who had also done *Showgirls* and *Starship Troopers* with Paul and me. Allan and I began talking about the sets and developing our ideas.

"The main set in the film is the scientists' laboratory," Vacano continues. "The lab is supposed to be built inside an old atomic shelter from Cold War times; it's located 20 floors or so below the Pentagon. [According to the script], the shelter had not been used since the end of the Cold War, and the government

decided to build a high-tech laboratory there and set up a group of scientists to work on their most top-secret projects. When I read the script, I immediately began thinking, 'Okay, this is a modern lab and it's very secret. It should not have any access, and when the one access is blocked, people are trapped inside.' (Naturally, this aspect of the lab's layout eventually factors into the narrative.)

The lab set was constructed on the Sony Pictures lot within one of the world's largest soundstages, Stage 15, which measures approximately 360' x 160' and more than 40' high. Production designer Cameron and his crew created the enormous, snaking underground lab as a series of modular rooms connected by mammoth tunnels. "Allan and Paul

had come up with the idea that this was a new structure built within the old atomic shelter," Vacano relates. "I therefore started thinking, 'How can we make this idea visible during my participation in preproduction?' Allan and I came up with the notion of using a lot of glass in the lab, so we would always have a layer of transparency between the modern foreground and the old background. The design also factored in the idea that while most of the corridors were rebuilt as part of the new structure, there were also some sections that still looked as if they'd been built 40 or 50 years ago."

Vacano then worked with Cameron to integrate his lighting ideas into the set's design. "My approach was to try as much as possible to shoot the sets with an 'available light' feeling," he says. "I wanted the sets lit so that the light was part of the architecture. Of course, we never used the set's available light by itself, but when I saw all of the tunnels' round structures, I said, 'How can we light them so that wherever we look, we can see the lights and they fit into the design?'"

"First, I knew I wanted to use fluorescent lights, because they really worked with both our [practical] 'available light' strategy and a modern, high-tech look. Allan and I knew we couldn't just go to a hardware store and buy fluorescent fixtures that fit the design style — we had to develop something. Allan then suggested that the fixtures be curved like the tunnels. Everything was curved and round, so it fit nicely that our light fixtures would follow that structure. We had the art department build several hundred round, fluorescent fixtures that we then hung up everywhere.

"However, with all of the lighting from above," Vacano continues, "everything was top-lit, and that doesn't always look good. The fixtures alone would be fine, if it were just one scene playing there and it



was lit from overhead. But with about 80 percent of the film taking place in the lab, that would get boring very quickly. I began thinking that we needed to light the structure itself, the whole corridor and the walls. The sets needed some graphic feeling that would allow viewers to see how the corridor's perspective went along and curved. With that in mind, I suggested we place some light bands on the sides of the walls — just one or two fluorescent fixtures, 6 or 8 feet long, depending on the length of the tunnel segments, and covered on the front so that the light would only bleed out onto the wall. Because the walls were curved and mostly metal — all of the newer surfaces in this film were metal and glass — the light was distributed and reflected around very nicely. I was then able to get a feeling of how the corridors would look. Knowing we had some big corridors and some smaller corridors, I also suggested that the big corridors should have two of these light bands, while the smaller corridors should have only one band."

Further advancing the idea of new technology built within the remnants of old technology, Vacano distinguished between the two disparate eras with his use of light and lighting instruments. "In the newer structures, the cool fluorescent light flows out through the glass windows and lights the old concrete bunker walls in the background a bit," he details. "But I also lit the old areas with old, dim tungsten lights, and the concrete itself was a little bit beige-colored. I consciously created a difference between the colors of the new technology and those of the old world. For the old-world areas, we'd use the dimmed tungstens and 2,900-degree Kino Flos to lend those environments a warmer feel; the modern portions had a colder, more technical touch of metal and glass, and we used standard 3,200-degree [Kino Flo] tubes. Also, in the older,



untouched tunnels and sections of the shelter, we had old-fashioned work lights such as Chinese hats, just to provide a different feeling."

Because so much of the film takes place in the laboratory, Vacano was concerned that the scenes within those sets might become too similar in look and feel. In an effort to prevent that, the cinematographer devised several different "moods" of light that corresponded to different times of day — and different stages of suspense. These included a daytime "active" look and a night-



time "non-active" look. "When you are shooting a film in one set and everything looks the same all the time, it can get pretty boring," Vacano opines. "You need to have the possibility of different day or night looks in your lighting scheme — but in an underground set, day or night doesn't work because there are no windows. You can never look out, and there is no daylight at all. I figured we could just imply that there were times of activity and times of non-activity, with most of the activity taking place during the day."

He elaborates, "During prep, I had the whole set pre-lit for five weeks or so, rigging more than 1,000 Kino Flo tubes, all on different ballasts and dimmers. That was done way ahead of time just to help give me a feeling for the sets, so that when I thought about the story and read the script again and again, I could get [a better] feeling of how things should look. Paul is a wonderful partner in this process because he is not terribly specific about it. He says, 'Okay, you're doing the lighting, just let me know what you think and tell me what you're preparing.' So I told him, 'Maybe we could work in some situations with just the overhead lights on, in others with just the side lights on, and in still others with different combinations of those lights.'"

Vacano shot *Hollow Man* with Arriflex cameras, carrying a package that consisted of a 535B (which served as the first unit's A-camera) to 435s, BL-4s and a Moviecam Compact for Steadicam work performed by operator Mark Emery Moore. The cameraman employed Zeiss Standard-Speed T2.1 lenses for most of the production, but he occasionally switched to Zeiss T1.4 Superspeeds when he needed an extra stop. Vacano's camera crew consisted of operator Tom Yatsko, first assistant Greg Irwin, second assistant Joy Stone and loader Jerry Patton. The cinematographer also

Linda Foster (Elizabeth Shue) attempts to elude her invisible pursuer in an elevator shaft beneath the Pentagon. The faux shaft was constructed on the side of the Sony lot's seven-story parking structure, which enabled the filmmakers to position a camera from any of the structure's levels. Additional angles were achieved via a PowerPod remote head affixed to a crane. Greenscreen material was stretched over the top of the set to allow for further digital extension of the perspective.

Caine may be clever, but Foster can see right through him.

NOW YOU SEE HIM...

by Ron Magid

Paul Verhoeven's *Hollow Man* boasts the closest thing to a digital (albeit sometimes invisible) human yet, courtesy of Sony Pictures Imageworks and Tippett Studios, the same team responsible for the Academy Award-nominated effects in Verhoeven's *Starship Troopers*.

SPI visual effects supervisor Scott Anderson, who won an Academy Award for *Babe*, oversaw *Hollow Man*'s complex invisibility work, and also served as the picture's second-unit director. Anderson prepared by studying the sleight-of-hand that special-effects wizard John P. Fulton, ASC brought to Universal Studios' classic *Invisible Man* films of the 1930s and '40s. "There's so much that's been done with invisible men through the history of film, and some of the original stuff was just brilliant for its time," enthuses Anderson, who was the lead animator and compositor on the more recent *Memoirs of An Invisible Man* (see AC Dec. '91). "I don't know if we quite pay homage to what went before; we were more focused on making everything in this film believable — making the science interesting, entertaining and beautiful, while also making the necessary moments of threat very real."

Research and development on *Hollow Man* began in July of 1998. Anderson and his Imageworks team of more than 250 quickly realized that in order to create an invisible man onscreen, they were going to have to build a completely digital human from the inside out. "Everything on the human body ties to the skeleton, so we started there," Anderson says. "The first six months were oriented toward building a generic human for testing, and once Kevin was cast, we went tuned our model to Kevin's body. We actually



worked with medical consultants and physiologists on this show, and we were able to show them things they've never seen. We're not only working with the surface characteristics of human form and animation, we're also getting down and dirty and showing it to you layer by layer."

Audiences will experience those layers during Caine's transition from visibility to invisibility. "Evaporating" is a simple way of describing it," Anderson offers. "One of the first things we do in the film is get into the process of how invisibility happens, and it's a magical, beautiful piece of visual exploration. Unless you've performed autopsies, you'll probably see a lot more than you imagined. No one has experienced a dynamic, sentient being from the inside out, but you're going to see an awful lot of that in *Hollow Man*."

"The Transformation," as Anderson and his team call it, is the most complex effect of its kind ever. "The film explores the transformation almost like a scientific study," he says, "but in the end, it's still entertainment. We've pushed far into the visually amazing realm, and we tried to avoid [the usual methods]. Rule Number One from Paul was 'No dissolves,' which was tough, because you can do very complex work that in the end still looks like a dissolve. We pushed a whole artistic and technical aesthetic, in that we would erode or grow material based on a functional or structural basis.

"On the other hand," he adds, "we didn't want it to look like animation, either, so we spent a lot of time studying and evaluating the human form and then tool-writing to make the transformation look organic. In the film, it's a chemical process that causes Caine to become invisible. That's a sound, visual, scientific concept, and I think when people see it, they won't say, 'Oh, that's a cool effect,' but, 'Yes, that's what happens to the human body when you inject this chemical into it.'"

Although Maya software running on Silicon Graphics workstations was Imageworks' program of choice, the transition sequence relied primarily on proprietary software. "It's an amazingly complex process of using essentially surrogate objects to drive in-house software that's been developed just for this project," Anderson says. "We've taken the best of medical science, applied it to what we need to do, and used off-the-shelf software to control the process, but the process itself is entirely proprietary. We've written huge bodies of software to help with everything from the removal and integration of Caine into the film to the control animation and structure of the human forms. There were scores of technicians, artists, animators, technical directors and shader writers pulling the strings behind the transformation, and everything was animated and controlled by humans who worked very, very hard." ■

continued his longtime association with former assistant/operator Anette Haellmingk, who served as second unit director of photography.

Given the multitude of effects shots in the film (nearly 600 in all), Vacano elected to shoot the film almost entirely at 200 ASA, utilizing Kodak Vision 200T 5274 for non-effects shots and the comparable SFX 200T effects emulsion for shots involving Bacon in a greenscreen suit or scenes that would later be manipulated in post. Vacano also utilized some high-speed Vision 500T 5279 for night exterior scenes shot on location in Washington, D.C., but those sequences comprise just a small fraction of the film.

"It's interesting that I shot most of the film on 200 ASA stock," notes Vacano. "Normally, when working with this type of set, 500 ASA would be perfect, but because there were so many effects shots in the film I knew I would have to light for the 200 ASA SFX stock anyway; the effects people always have a problem pulling good mattes if you use the normal high-speed stocks with bluescreen or greenscreen. At that point, I thought, 'Okay, if I have to do this shot for this scene at 200 ASA, then I might as well do the rest of the film at the same rating. I therefore decided to use the Vision 200T in combination with the SFX 200, and they matched very well.'"

The Vision 200T also worked well with Vacano's use of soft fluorescent lighting, yielding a shooting stop of around T2.8. "I'm a big fan of soft light," the cinematographer states. "I think when you tell a story, whatever story it is, the more realistic you are the more the audience will believe what they see. If the visuals are overly artistic for no apparent reason, I always have the feeling that they'll take the audience out of the story. For that reason, I try not to surprise the audience too much with unexpected things.

"In nature, for instance, there is not so much hard light; there's sunlight and there's diffused skylight," he continues. "Likewise, when you're within interiors, people don't normally have a bare bulb hanging on the ceiling; they have a table lamp with a warm-colored shade on it. If it were just a bare bulb, it would practically blind you. Almost every light in a living room is built to give off a diffused light rather than a strong, harsh light. In taking a realistic approach to storytelling, I therefore became a fan of soft light."

Once Vacano had his architectural lighting design and mood scheme in place, the day-to-day shooting came together surprisingly quickly, even with the special attention required by all of the visual effects (see sidebar on page 42). "We had a huge amount of pre-lighting and pre-thinking on this film, so once we were on the set shooting, it went very easily," he says. "Everything was already there. On a shot-by-shot basis, I only had to take care of the actors' [fine-tuned lighting]. Because the sets were already lit, I would just kill the overhead lights above the actors and add lights [by bringing in Kino Flos on stands] from the side, from underneath or from wherever the source was motivated.

"I believe that whatever you are shooting, the shot is about characters. It's about their faces and their emotions, and emotions are solely in the eyes — you don't see the emotions in the ears. Obviously, that idea doesn't really allow for just top light, so whenever a set has a lot of top light, I'll place a flag — or at least some diffusion, like 216 — over the actors to cut off the top light. I can then light them from the floor, playing the light in line with the content of the scene and the characters' feelings. If they're having more harsh or disturbed feelings, I can follow that idea with the light."

With this method, Vacano has made a study out of working with

Hollow Man. Solid Teamwork.

The shot list for *Hollow Man* already included a lot of tricky motion control camera work to create the "invisible" effects. But the script contained yet another element that gave this technical feat an unprecedented twist — water.

General Lift's Joe Lewis called on us to help him make it possible for cinematographer Jost Vacano, ASC to shoot motion control sequences in extremely wet conditions as well as underwater. Actor Kevin Bacon was to be filmed running through a tunnel as fire sprinklers dumped water at a rate of 4 gallons per second on him and the cameras. Another intense fight scene would require motion control footage shot at the bottom of a swimming pool.

Together we created a watertight package that included General Lift's custom underwater motion control rig, HydroFlex's 435 RemoteAquaCam and splash bags equipped with spray deflectors. Jost got the multiple passes he needed and the footage was, well, in the (splash) bag.

We'd like to thank Joe Lewis and the *Hollow Man* crew for giving us this opportunity. *Hollow Man* proved to be quite a challenge, but then General Lift and HydroFlex proved to be a solid team.

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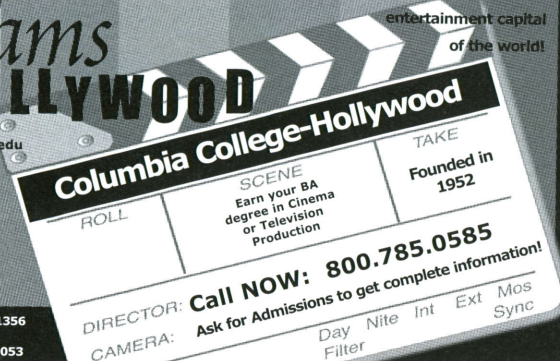
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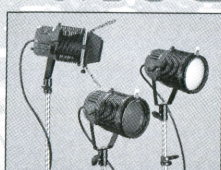
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Sight Unseen

soft light and fluorescent sources. "There is a lot of misunderstanding in terms of what soft light is about," he submits. "I work with it very precisely in the way that I try to model the light on a face. You can do wonderful things with fluorescents because of the structure and size of the bulbs. It makes a big difference if you're lighting a face with a fluorescent bulb that is horizontal, a bulb that is vertical, or even one that's at a 45-degree angle. In one direction it works almost like a hard light, and in the other like a soft light. Naturally, soft or hard light is very much related to the angle at which the light hits a person or an object, but with a horizontal bulb, the light is stretched around the face so it's very soft. You can make a face a bit wider and broader, because the light from the edges of that long bulb floats around the face and fills in the sides. With a vertical bulb, the light is actually quite small and thin; you can get much more direction in the light than you can with a horizontal fluorescent. And even though it's a soft source, you can still get a nose shadow at the right angle. That can look very nice if the angle of the bulb works, or if it's sort of parallel to the angle of the nose. Even with a soft light like a fluorescent, you can modify a face to a great degree."

For *Hollow Man*, Vacano extended his soft-light approach to the world outside the underground lab, particularly for scenes set in the characters' apartments. For Caine's home, a three-story structure was erected on stage to allow for a sense of height through the apartment's windows. "Allan built the interior and exterior of the apartment," Vacano relates. "There are scenes in which he looks out his window at the opposite building. Every night he watches this nice girl come home and start to undress in her apartment, but she always closes the blinds just when things begin to get interesting. After

Continued on page 48



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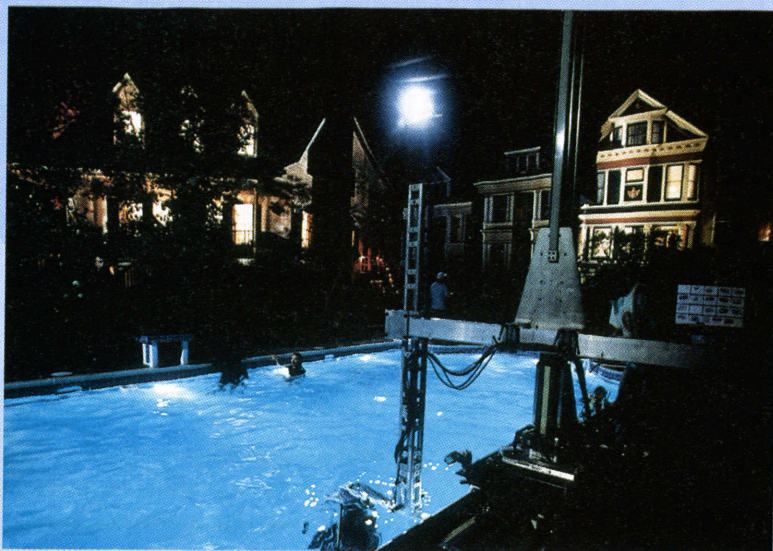


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General Lift provided the production with a fully configured Aquaflex motion-control rig. Here, the unit's Hydroflex camera housing is fully submerged in a swimming pool, which was part of a set built within the enormous Stage 12 on the Sony Pictures lot.



TRANSPARENT CAMERA MOVES

by Les Paul Robley

Motion-control" is a phrase that strikes fear and loathing in the hearts of even the most seasoned film crews. This painstaking technique traditionally takes longer than normal camera setups and has a greater degree of Murphy's Law built in, despite the superior accuracy one gets from controlled movement and perfect repeatability.

Hollow Man promises incredible invisible effects unlike any (un)seen before. In collaboration with visual-effects supervisor Scott Anderson and director of photography Jost Vacano, ASC, BVK, director Paul Verhoeven worked to achieve motion-control that would not reveal itself as motion-control. The equipment needed to be quick and easy to set up and versatile enough to be effortlessly rerigged as shots were modified on set. Most importantly, the film needed to look as though it had been shot with a free-moving camera.

"There was so much motion-control on the first and second units of *Hollow Man* that I made a point early on to try and have the equipment accepted by all departments as

standard production gear," recalls motion-control operator Eric Pascarelli. "I have often encountered an 'Us vs. Them' mentality toward motion-control on live-action sets, and I wanted to avoid it on such a long project."

Sony Pictures Imageworks' silent, servo-driven Stealth Dolly was used for the entire nine-month shoot, along with several special rigs made by General Lift in El Segundo, California. The motion-control moves were performed by each of the camera crew members seamlessly — dolly grip Mike Connor controlling the Stealth Dolly; Leo Behar operating the boom elevation axis; operators Tom Yatsko (first unit) or Phil Forester (second unit) panning and tilting the camera using remote wheels or an encoded Sachtler or O'Connor fluid head; and first assistants Greg Irwin (first unit) and Lauren Yaconelli (second unit) pulling focus in real time. Using the updated Kuper RTMC130 software, all of this information was gathered by Pascarelli as if he were a data sponge.

For scenes involving Kevin Bacon's invisibility, motion-control was required because his "hero" take would be immediately followed by a "clean-plate" pass to provide the background information that was

covered by the actor. Extra passes of the same shot might be made for other elements, such as smoke and fire, or splashes, bubbles and drips in the wet scenes. The track, boom, pan, tilt and focus axes were played back together for each of these clean passes without anyone in the plate so that all camera movement would repeat precisely for the digital-compositing stage later.

Bob Sterry of CompMagic, one of the visual-effects video-assist operators, explains, "We triggered the mo-co with time code using Kuper's Start TCode Trigger feature, then played back the live-action passes with a simple video dissolve against the clean passes to make sure the moves lined up precisely."

Hollow Man marked the first time a fully immersed, underwater, motion-control camera rig was used in a feature film. The film's ambitious shots meant that the rig needed to have a great range of motion. The entire pan/tilt head and all cabling had to be waterproofed so that the rig could be submerged as far as necessary. The rig also had to facilitate shots beginning underwater and breaking the surface. It needed to be very fast and powerful so it could handle sudden changes in buoyancy.

"*Hollow Man's* use of wet motion-control, or what I called hydrodynamic motion-control, was required for two sequences," explains Joe Lewis, owner of General Lift. "One was a swimming pool at a suburban home in Washington, D.C.; the other involved the secret, subterranean lab corridors beneath the city. [After meeting with the visual effects producers], we came up with a set of specifications, and in December of that year Tippet Studios took over these sequences.

"For the pool scenes, we were able to utilize different components from our stable of systems," Lewis details. "The basic system consisted of 24 feet of narrow-gauge Tiffen Motion-Control Track, which ran

parallel to the pool's edge. Atop this was a tower with six feet of vertical travel mounted on a JetRail dolly, a modified GenuFlex boom arm that could extend manually out over the pool, and a custom RotoFlex Pan & Tilt head with waterproof stepper motors. To this we fabricated a precision mounting bracket with quick-release pins to attach the HydroFlex housing for an Arriflex 435 camera. We modified one of our stepper-motor focus brackets to mount to points supplied on the Arri 435."

The action in the pool is the violent drowning of a character by the invisible Bacon. The system needed to be versatile enough to travel with the action as it moved from above to below the water's surface. As with the dry motion-control, all axes were controlled with encoders by the same crew of operators. Pascarelli handled all of the data-recording and system-playback functions using the same Kuper software.

"The underwater motion-control shoot took place almost a year into the schedule, and it had to work the same way as everything that preceded it," Pascarelli points out. "We had achieved a certain pace and method of working that needed to be maintained. The camera and housing were removable by registered quick releases so that the film mags could be changed between passes with perfect repeatability. An underwater assistant would hand the camera off to a dry assistant, who would then reload or change lenses, and we'd be on our way."

Adds Lewis, "We rigged an underwater lipstick video camera that allowed us to check our 'home' reference marks for the immersed axes between takes. This helped streamline the production. Even the ubiquitous bloop light or frame marker had to be housed inside a waterproof case to indicate the first frame of the move for later line-up during the compositing stage. The

entire system was isolated electrically on its own Shock-Block GFI [ground fault interruptor] box. This sequence and the rain corridor shots were daunting, in that the GFI boxes would shut down immediately if any problem was detected."

The underwater camera consisted of an Arri 435 equipped with back-slung magazines designed to fit within the HydroFlex housing. The rain-corridor camera was a modified Fries Mitchell 35R3. Lenses were all Zeiss T2.1s, and the film stocks were Kodak's Vision 200T 5274 and SFX 200T.

The lab rain-corridor shots, in which the invisible man's form is revealed by water running off of him, utilized a slightly modified JetRail dolly, a "water-hardened" Extendo-Matic elevation rig and a modified RotoFlex Pan & Tilt head. A series of U-Bangis were fabricated to allow the camera to be placed in a variety of positions. A reflexed Fries Mitchell camera was placed in a HydroFlex Splash Bag with twin compressed air nozzles that blasted off the water as it hit the front port. By experimenting, the camera crew found that aiming the nozzles asymmetrically with an ongoing application of Rain-X was effective in keeping the heavy deluge off the glass. The JetRail dolly ran on standard Peterson/Holt I-Beam track with a belt that provided a non-slip drive. For sync sound, the dolly was not as quiet as a complete friction-driven servo system, but given all of the noisy water effects, this was not a problem.

"We were able to move the system quite quickly through the water with no repeatability problems, and we could do pretty fast whip-pans as well," Lewis notes. "It worked better than I ever expected."

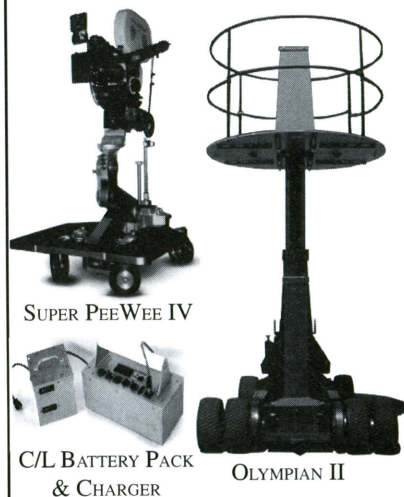
Writer Les Paul Robley was one of the motion-control operators on Hollow Man.

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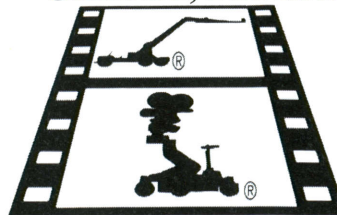
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Sight Unseen

Continued from page 44

he is rendered invisible [and] his new powers have darkened his character, he starts thinking, 'Maybe I should go over and do something with her.'

"The apartment sets were completely different in feel from the lab sets," Vacano continues. "In the lab, it's always tense and closed-in — it's just a working atmosphere, and it's not really connected with life. The characters' homes, on the other hand, have much more of a feeling of real lives, maybe even good lives. The colors are warmer and the furniture is different. Caine's apartment was lit mostly with practicals and fluorescents [but with 2,900-degree bulbs] so that it was nice and cozy and a little bit warm. Also, I did those scenes with slight diffusion filters, mostly ¼ White ProMists, just to lend the apartment a soft, cozy and personal feel; by contrast, I didn't use

any filtration at all for the lab set. The lab was all glass and metal and the costumes were not very colorful, so the main colors in those scenes are the actors' skin tones."

Vacano used fluorescent lighting fixtures almost exclusively during the shoot, but one notable exception was made during the film's three weeks of location work in Washington. "Obviously, you cannot light big night exteriors in a city with just Kino Flos. In one sequence, for example, the scientists are finally able to make an ape invisible, and afterwards they have a party in a nice restaurant. Later on, they celebrate on the rooftop of a building overlooking the whole city, and we had to light that from far away because no lights were allowed in the vicinity of the Capitol.

"To do that type of scene, you need lights that can be focused, with long enough throw to reach build-

ings far away. We set up two big Muscos, as well as several Condors with 20Ks, 18K HMIs and various Pars. Normally, uncorrected HMIs at night are too blue for my taste, so I always have a ½ correction on them. If I also have a 20K, I'll add ½ blue to match the HMIs. Either way, it comes down to personal taste — some people don't like to use anything blue at night, but others feel it's traditional to have blue backlight. Once you've done that [big lighting], you can light the faces with whatever you want. For our nighttime scenes, I used a larger fluorescent unit, such as a Kino Flo Wall-O-Lite, to light the actors."

Aside from the film's lighting scheme, one of Vacano's major challenges was dealing with complex effects shots involving the supposedly invisible Bacon interacting (and performing) with his fellow actors. In most instances, Bacon's presence would be entirely removed from

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these scenes, but Verhoeven deemed it necessary for Bacon to don the green suit and provide the vital interaction with the other actors. Bacon's task also became Vacano's predicament, in that a great majority of the effects sequences would be executed by the main unit. "We worked with a lot of different motion-control techniques," Vacano says. (See sidebar about motion-control on page 46.) "We had various encoders on the heads, and we even had an underwater motion-control unit for a big fight scene in a swimming pool. With all of the effects work, we ended up shooting for almost 130 days, which was similar to our schedule on *Starship Troopers*.

"Anytime Kevin was in the green suit," he continues, "he needed an additional, special light. Whenever you do greenscreen work, the green has to be at least somewhat uniform in its density.

We didn't light Kevin the way I would normally light a character to match the scenery; instead, we had to fill in the shadows on him much more so that the green didn't get too contrasty. Of course, the trick was then to make sure the fill light didn't hit the set or the other actors!"

For the swimming-pool fight, the filmmakers couldn't have Bacon merely don a green bathing suit or unitard and then blast light at him through the water. Instead, the effects team painted the actor entirely black with a thick tar and used the black density to extract mattes of the actor's form. "We started that scene on location in Washington at a house that had a pool in the backyard," Vacano details. "However, we then had to rebuild the pool and backyard on stage so that we could do all of the effects shots under water. The [underwater invisibility] effect is

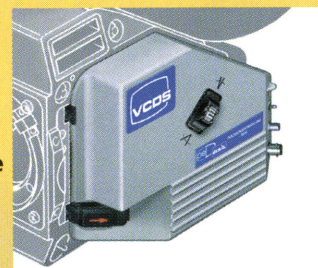
pretty amazing — you can see almost a human-shaped bubble wrestling with a CIA agent. We created just about every conceivable scenario to show off the character's invisibility, ranging from smoke to fire extinguishers and CO₂ bottles, then to sprinklers and water effects. Naturally, it all required heavy effects work.

"My second-unit director of photography, Anette Haellmigk, did many of the complicated greenscreen, fire, rain and action shots," he notes. "She has worked with me on many films; integrating your work into someone else's style so flawlessly that no one can see the difference is a special challenge. Sometimes the second-unit crew lights and shoots complete scenes themselves, and they do an enormous amount of creative work on a big film like this one." ■

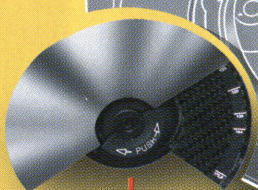
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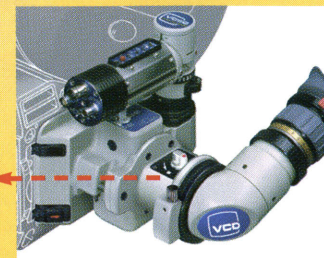
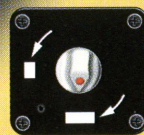
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Invisible Force



Director Paul Verhoeven imbues *Hollow Man* with his usual flair and full-blooded gusto.

Interview by Jay Holben

Unit photography by Stephen Vaughan, SMPSP

Director Paul Verhoeven says his interest in film began when he was a child in Amsterdam during World War II, after the British bombed a film lab near his home and the explosion scattered rolls of film throughout the neighborhood. "I picked them up and became fascinated with the pieces,"

he recalls. His father, an elementary-school principal, showed documentaries about cattle and farming to his pupils at a time when the occupying Nazi forces prohibited all other moviegoing. "Then, in 1946, American movies started to come into Holland again, and I got to see films like *Gone with the Wind* —

what a difference that was from *How to Feed Your Cattle!*" Verhoeven says with a hearty laugh. He went to the movies three times a week for the next 10-15 years, becoming a self-proclaimed B-movie connoisseur.

Verhoeven began making short films at the University of Leiden while earning a degree in mathematics and physics, and after he was drafted into military service he made several documentaries for the Dutch Navy. "I thought, 'Mathematics is fine, but filmmaking is better,' and I decided to become a filmmaker," he says. After making several acclaimed films in Europe (including *Turkish Delight*, *Keetje Tippel*, *Soldier of Orange*, *Spetters* and *The Fourth Man*), Verhoeven moved to the United States.

Few of the films he has made since have been released without controversy. *RoboCop*, *Total Recall*, *Basic Instinct*, *Showgirls* and *Starship Troopers* all demonstrated that Verhoeven is not afraid to depict violence and sex in ways that make the MPAA extremely nervous. (*Showgirls* was among the very few films released with the NC-17 rating.) *AC* recently asked him to discuss how he brought his famously graphic style to bear on his latest picture, the sci-fi thriller *Hollow Man*.

American Cinematographer: How would you describe the tone of *Hollow Man*?

Paul Verhoeven: Dark, scary, intense. The whole story is really [inspired by] Plato's *Republic*; in the second book, Plato tells the story of a

Photos courtesy of Sony Pictures

man who finds a ring that can make him invisible, and describes what such a man might do with this power. The man goes to the court, sleeps with the queen, kills the king and becomes king himself.

Plato says man is not just and decent because of internal morals; [rather,] he is obedient to the restraints of society. If you remove those restraints — if a man were to become invisible — he would steal whatever he could get, enter every house, rape every woman, kill all the men and basically behave like a god. That is what Plato foresaw about invisibility. I'm not sure he was right, but it is a very interesting possibility to explore.

How would you describe your approach to the film?

Verhoeven: When I first read the script, I thought it was going to be easy [to shoot]. I thought that Sebastian Caine [the scientist portrayed by Kevin Bacon] would be merely a digital addition to the scenes, and that Kevin would only be there for about 30 percent of the shooting. I thought that all I had to do was shoot my plates with the other actors, then give the footage to the digital people so they could go off and add in whatever hint of Sebastian was necessary.

However, when I started to talk to visual effects supervisor Scott Anderson at Sony ImageWorks, I started to realize that to do this film well, we would need Kevin on the set the whole time, whether his character was supposed to be visible or not. Of course, he is rarely completely invisible. If you could never see him at all, and you just heard this disembodied voice, that would get really boring. So we came up with pretty much every conceivable way that you might be able to see an invisible man, and I have to credit [screenwriter] Andrew Marlow for very ingeniously working those situations into the story.

[For example], if Sebastian is



walking in the rain, then the raindrops are bouncing off his body; although light rays can pass through him, particles cannot, so the water rolls down his body and we see Kevin's outline traced out in a waterfall. In order to achieve that technologically, we had to shoot each sequence twice with motion-control cameras. Kevin was always dressed in a blue or green leotard with blue or green makeup on his face, hands and teeth — he even wore blue or green contacts in his eyes. We would shoot one pass of the take with Kevin doing his thing, and then shoot the plate pass so that they could meld the two in the computer and see through Kevin; the raindrops would be a pantomime outline of Kevin performing. To create a human performance from a computer is still nearly impossible. Although we used a 3-D computer model to enhance these scenes, the model was based on intricate scans of Kevin — his eyebrows and fingernails, even — and pasted on his real performance from the set.

If we hadn't had Kevin on the set — if we had nobody or a stand-in or a cardboard cutout — it would have been extremely abstract for the other actors to perform with Sebastian. It would be just like the old movies, a bit stiff and silly. Plus,

when there are physical interactions between characters, it looks real because we really did it! When Sebastian is grabbing someone's clothes or pushing them around, they react realistically because Kevin was really doing it!

Your visual style, which is very fluid and makes substantial use of Steadicam and dolly work, must have made working with motion-control a bit taxing.

Verhoeven: Yes, I found it extremely annoying — it is so time-consuming. It's nightmarish, really! You shoot six, seven or eight takes of a scene, and maybe you like four of them. Then, for each of those four takes, you have to shoot a separate take for the motion-control. If for some reason that doesn't work — for example, if the wheels on the dolly slip a bit or get stuck — you either do a lot of work in post to correct it or you have to do it all over again. It takes so much time! With a Steadicam, if you want to make a slight adjustment in framing — if the cameraman steps back and moves slightly around an actor for a better frame, for example — that same motion is diabolically difficult, even impossible, because you can't make sharp angles on the track. They have to be curves.

The trade-off there would be

Opposite page: The wily Paul Verhoeven, though perfectly visible, creeps up on a seemingly unsuspecting Elizabeth Shue. **This page:** Never one to rein in his enthusiasm, a demonstrative Verhoeven details his vision for director of photography Jost Vacano, ASC, BVK (left).

Invisible Force

Vacano and Verhoeven block out a scene with good sport Kevin Bacon, who's been mummified beneath a layer of liquid latex and a hooded sweatsuit.



spending less time on set but considerably more time in postproduction, which is often when the schedule is the tightest.

Verhoeven: Yeah, it's a trade-off, but I'm not sure if spending more time on set was the better decision. The set is so expensive — you have 300 people standing around, and if the dolly slips and we have to go again, it kills the momentum of the shooting.

How did that affect your directorial style?

Verhoeven: Well, when I did *Starship Troopers* I was more respectful of the problems that the digital artists would have in post, so I shot that film much more statically, unfortunately. There are dolly and Steadicam shots in *Starship Troopers*, but not that many. I didn't want to do the same thing on *Hollow Man*.

[Cinematographer] Jost [Vacano] was wonderful in that respect, as he is always wonderful! Jost and I have been working together for 25 years, all the way back to *Soldier of Orange* in 1975, and I have always tried to stage scenes for a moving camera. Back then, Jost had his own gyroscopic, Steadicam-like camera system that he invented, and we got wonderful, very smooth handheld shots. We used that all the way up to *Total Recall*. Jost is really keen in designing shots that have a

free-floating style, which I like.

For this film, he carefully constructed and planned shots, within the limitations of the motion-control, that would feel as if we were using Steadicam. Combining straight and curved track and pans, he kept a very free camera style with very complicated, regulated moves.

You've worked exclusively with Vacano or Jan DeBont, ASC on the 23 films you've directed. You've even spoken about choosing between the two of them much the same way a director might choose between two actors. Can you elaborate on that?

Verhoeven: Well, I cannot use Jan anymore [because he's a director]! [Laughs.] So that way of thinking is lost, unless I find another Jan — which I should, because I think it is good to work with a couple of cinematographers. You don't need a new one for every movie. It's vitally important to have a relationship and an understanding with your cameraman, and that is only built up through years of working together. In basic terms, Jost uses more blue and Jan uses more red. Jost's work has a more matter-of-fact quality, a sense of realism. Jan's [manner] is a little bit more [stylized] — it's a little more elegant, a bit warmer and more romantic.

With the two of them, I could

go either way on a particular movie. Sometimes I chose one not so much because I thought he was better-suited for a project than the other, but because the other was unavailable. I made several films with Jost that I could have made with Jan, and vice-versa. I think it would be very interesting to see the differences.

Are there any films you can cite as an inspiration to your approach to *Hollow Man*?

Verhoeven: *Abbott and Costello Meet the Invisible Man*! [Laughs.] Actually, I was very scared by *Abbott and Costello Meet Frankenstein*! I was seven or eight, and I thought it was extremely scary.

One of the common pitfalls in a film about invisibility is the camp factor. Did that worry you?

Verhoeven: I tried to avoid that silliness at all costs. I tried to avoid things like showing a pencil floating in the air and then being set down. I wasn't able to avoid it completely, of course, but in general we tried to be a lot smarter in how we depicted Sebastian's condition. The movie is supposed to be tense and scary, and those types of effects would have destroyed that feeling completely.

You've talked in the past about the influence Alfred Hitchcock has had on your work. Are there any sequences in *Hollow Man* that reflect that influence?

Verhoeven: Yes, quite specifically! [Laughs.] Hitchcock has been a gigantic influence on my editing, camera moves, point-of-view and camera placement. I've studied his films continuously. In *Hollow Man*, Sebastian's apartment building is shaped like a U, with a courtyard between two wings of apartments. When Sebastian is in his apartment, he can look directly into the windows of the apartments across the courtyard. He sees a girl in one apartment across the courtyard who is very beautiful, and once he is invisible, he basically goes in and attacks her.

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Invisible Force

To get the proper relationship between the apartments and the proper distance and size in the frame, I turned to *Rear Window*. It's a very delicate thing, because you need the windows to be a certain distance away so that with a shot of Sebastian in the foreground, you can still see detail inside the woman's apartment with a normal lens. However, you don't want the windows to be too close together or it seems silly and forced. We needed a realistic distance across the courtyard. [Production designer] Allen Cameron and I studied *Rear Window* and basically measured the distance between the apartments that Hitchcock used. We said, 'Okay, which lens do you think he used?' We eventually figured out how far apart the apartments needed to be and how big the windows needed to be to tell the story and make it feel real. We stole all of those answers directly from *Rear Window*.

Who else has influenced your work?

Verhoeven: In the United States, I'd have to say Steven Spielberg and James Cameron. From a more personal point of view, I'd say Paul Morrissey and his movies like *Flesh* and *Trash* — movies I would call very open-minded. Those influenced me a lot, though not so much from a technical point of view.

When I made *RoboCop*, I studied *Terminator* frame by frame. [I like] Cameron's editing style and the way he depicts action, and he's always at the forefront in terms of visual effects. He is always trying to innovate and proceed in different directions. Spielberg, aside from his amazing movies, was a direct influence on my moving to the United States. In 1978 or 1979, when I was still living in Holland, *Soldier of Orange* was released for the first time in the United States, and Spielberg

saw it. He called me and said, 'What are you doing there? You should come over here, and I'll introduce you to the studios.' And he did! He introduced me to Frank Price at Sony [which was then MGM], and we went out to dinner. I'm not too sure the movies I made later were so much Spielberg's cup of tea, but we all go our own way.

You've talked a lot about the role violence plays in your films, as well as the effects of growing up during World War II and witnessing violence.

Verhoeven: Saying, 'Oh, it has to do with my youth' makes it kind of understandable, but I really don't know if it's the truth. That was just a way to answer the question for journalists! [Laughs.] I use violence because I *like* violence. I'm not somebody who backs away from violence. I like to see war movies and documentaries about war; I like to see

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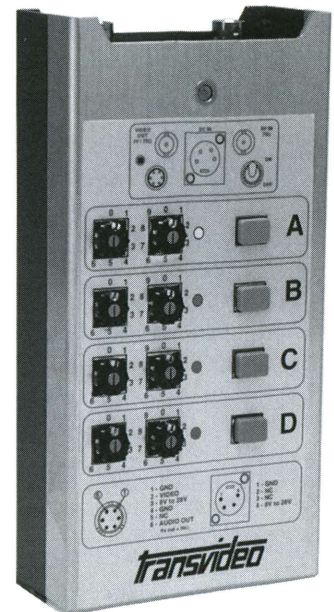
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things destroyed, I like to see the flames, I like to see shooting, and I like to do that in movies. I like to see gruesome scenes. I like to see what happens when you do something violent to someone else. I prefer to show things instead of depicting them elliptically or suggesting them — that might be a more artistic way to handle violence, and it's what people prefer nowadays, isn't it? Suggest gruesomeness, but don't show it. The MPAA likes that, too!

My tendency is to be ultra-realistic with these things — not necessarily with the movie itself, but with [the elements of] violence and sex. I like to see what happens to someone's organs, flesh and bones when something violent happens. Is that because of my memories from when I was a child? I don't know. Perhaps it comes from there, or perhaps I was born genetically violent! I'm not violent myself —

though verbally I can be very violent. I'm not somebody who would ever fight or hit somebody. I would try to hit them with words.

With all of the fingers that politicians have been shaking at Hollywood in the wake of some recent, horrific tragedies, especially those involving children, do you think there will be a change in how Hollywood treats violence, or in how you handle it in your films?

Verhoeven: When there is a problem with the economy or another cultural problem or a Presidential election, Washington always takes a charge at Hollywood. We're in the most violent century ever — which is saying a lot — but it's silly [to say that] people become violent through seeing violence in movies.

A couple of years ago, in the aftermath of [the controversy surrounding the violence in] *Total*

Recall, I started to study this issue. I read a lot of psychological papers and studies, and the results were completely ambiguous. There is a definite correlation between violence in films and violent people, in that violent films tend to attract violent people. But there is gigantic confusion in this country about the difference between correlation and causation! There is no evidence that violence in films *causes* people to become violent.

The same violent American movies go to Western Europe, and viewers there don't seem to have any violent reactions! They're watching the same movies! The only difference between the United States and Western Europe is that in Western Europe, you cannot get a gun. That's the only real, hard fact that you can put down on the table, because they see exactly the same movies. ■

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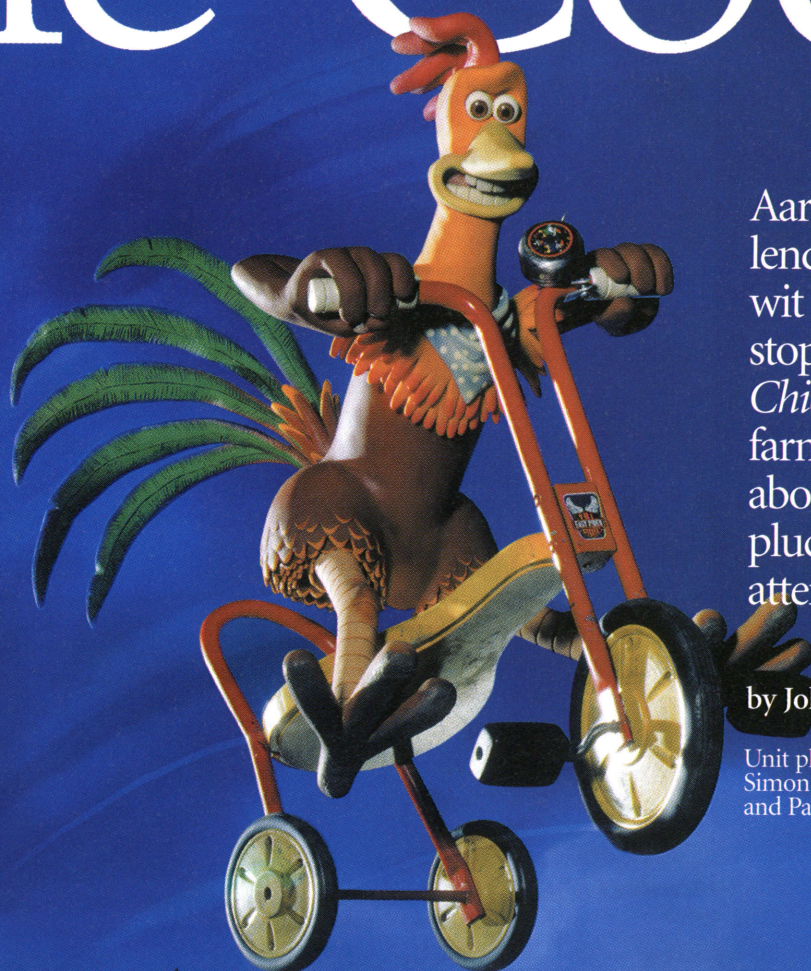
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Unit photography by Tom Barnes, Simon Jacobs, Richard Laing and Paul Norris

Compared with ordinary filmmakers, who point their camera at something moving and shoot it, animators have made life extremely difficult for themselves, inventing incredibly elaborate and tortuous ways to create moving images,” says Peter Lord, a co-founder of Aardman Animations, in the book *Cracking Animation*. “Instead of capturing something that is already moving, we painstakingly create each one of the still pictures needed to imitate movement in real life.”

For Aardman, the pain has paid off. Short films by the company, which is based in Bristol, England, have been nominated for Academy Awards five times (winning three), and two of its Wallace and Gromit shorts, *The Wrong Trousers* and *A Close Shave*, have won more than 80 additional awards. Aardman productions have also received a raft of BAFTA nominations and awards, including a Special Award for Original Contribution to Television.

Aardman was founded by Peter Lord and David Sproston in 1972, and its Bristol headquarters was established in 1976. The two were joined by Nick Park in 1985; all three now act as directors of the company. Early commissions from BBC Television enabled Aardman to develop Park’s Wallace and Gromit characters, which he introduced to great acclaim in *A Grand Day Out* in 1989. The short was nominated for an Academy Award, but Park ended up losing to himself: his *Creature Comforts* took home the prize that year. But Wallace and Gromit soon had their day — two years in a row, in fact. Their escapades in *The Wrong Trousers* (1993) and *A Close Shave* (1994) earned Park two more Academy Awards. Small wonder Lord has called the inimitable inventor and his faithful dog the “crown jewels” of the company.

Aardman’s elegant and imaginative stop-motion, 3-D puppet

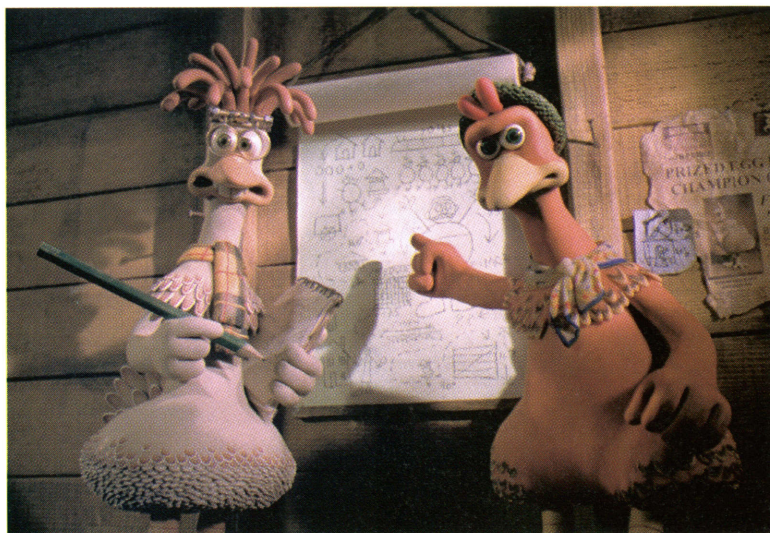


animation, which utilizes Plasticine modeling clay, has become an instantly recognizable style. The studio’s approach features precise lip-syncing and subtle facial expressions, as well as meticulously lit 35mm cinematography. The unusual demands of the art form require the studio to pay constant attention to technical developments that might suit its needs. “We want to keep up with the advances that have been made in live-action filmmaking,” says Tom Barnes, Aardman’s technical director. “At the same time, we need to take a slightly different path, because as we become more and more of a specialized animation company, we have to build and adapt

equipment to suit our methods — which, although similar to [those used in] live-action filmmaking, are not entirely the same.”

Aardman productions, which include television commercials, music videos and title sequences, reflect both an irrepressible sense of fun and serious craftsmanship. *Chicken Run*, co-directed by Lord and Park, is the studio’s first full-length feature. The picture’s plot pays homage to classic escape movies such as *The Great Escape*, *Stalag 17* and *The Wooden Horse*; the twist is that the potential escapees are chickens, and the hero is a circus rooster who, after being fired from a cannon, accidentally lands in the chickens’

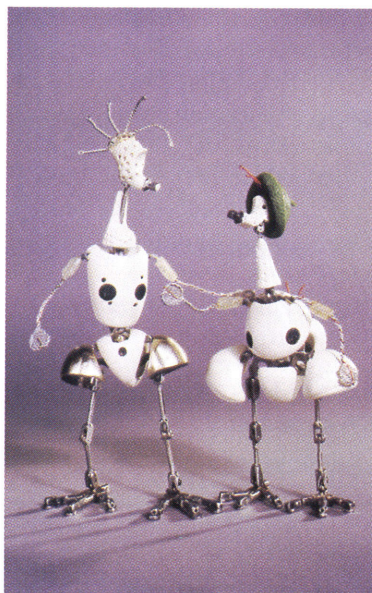
Opposite page: Rocky the not-quite-flying rooster comes to the rescue in *Chicken Run*, an adventure comedy that marks Aardman Animations’ feature-film debut. This page, top: The determined Ginger takes the underground route in one of her many attempts to escape from Tweedy’s Egg Farm. Bottom: Ginger calls on Scottish hen and resident engineer Mac (who bears a more than passing resemblance to Dustin Hoffman in *Papillon*) to help her explain the latest escape plan.



Flying the Coop

Top: The evil Mrs. Tweedy calculates her profits — and finds them quite unsatisfactory.

Center: Elaborate, fully articulating skeletons were the basis for the silicon-and-clay chickens, and several puppets were made for each lead character so that animators could work with them on more than one set at a time. Bottom: The cagey creatures march through the farm.



compound. The action takes place on a sinister farm in Yorkshire, England, during the 1950s, a setting that provides great cinematic scope and ample opportunity for Aardman's artists to exploit their penchant for allusions and puns. The film also benefits from a distinguished cast of voices, including those of Mel Gibson (as Rocky the Rooster), Miranda Richardson (as the evil Mrs. Tweedy, who runs the farm with an iron hand) and Julia Sawalha (as Ginger, the hen agitating for a mass escape).

By its very nature, of course, animation is painstaking work — it's as if the whole process of filmmaking is deconstructed and then rebuilt

layer by layer, starting with the voice soundtrack and the all-important storyboard. Park says he finds the initial drawing of a scene to be "the creative moment," though unlike cartoons — and like live action — the drawings are simply a means to an end. Complex 3-D animation of the puppets must follow, but the nexus of the entire film hinges on the voice tracks, one of the most difficult tasks for any actor to accomplish. Lord explains, "Although we go through the whole story with the actors at the outset, it is difficult for them initially, as they get very little sense of 'performance.' We started out optimistically, doing our big [audio] recordings for *Chicken Run* up front and thinking that that was it for the shoot — knowing it wasn't, but hoping it might be. What we did *not* know was that making an animated film somewhat in the American mold would involve constantly revisiting and revising the script, which meant going back to the actors, sometimes months later, to get them to do new lines."

As co-directors, Lord and Park had to ensure that the actors didn't imagine themselves voicing a cartoon, but rather acting for the cinema. Weeks later, their performance would be completed by the animators, who would imbue the 3-D characters with the proper facial expressions. Park adds that the actors' voice-overs require considerable subtlety, "because much of our [animation] work depends on equally subtle nuances, such as eyebrows that don't have to move much, which in turn is more like live action."

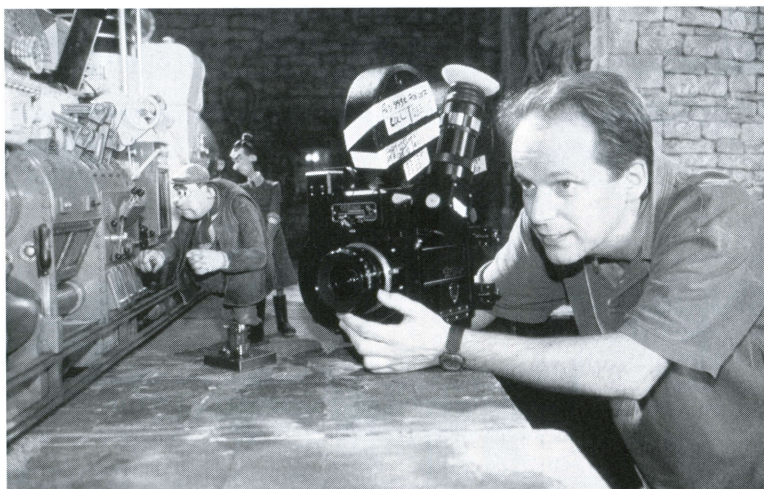
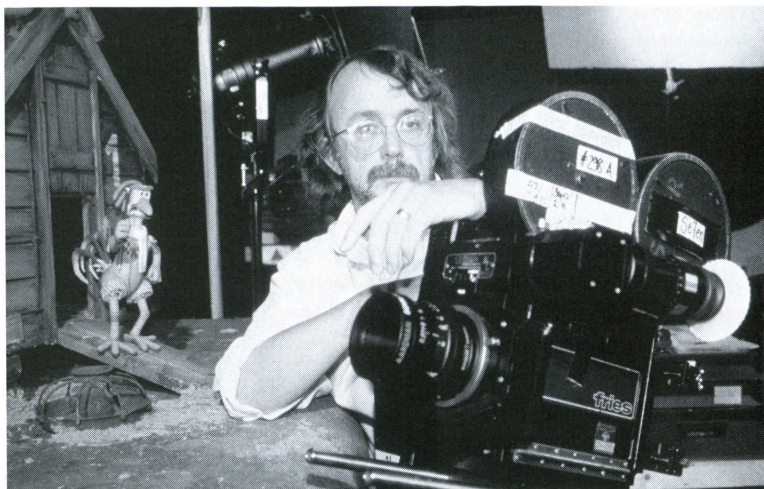
Chicken Run was shot at Aardman's studio in Bristol; the production initially occupied 60,000 square feet of stage space, but ultimately required more than 100,000 square feet to accommodate the 30-plus units that worked on the show. According to Dave Alex Riddett, the supervising director of photography,

the filmmakers originally thought they would need 24 units to shoot *Chicken Run* (12 units shooting and 12 units being prepared), but that number was soon exceeded. "One animator can turn out an average of three seconds [of footage] a day, and we aimed to produce 90 seconds of film a week out of all the units," Riddett says. "Eventually, we had an average of 28 units on the production, though they were rarely all working at once."

To prepare for a given sequence in an Aardman production, the directors act it out for the animator, who in turn acts it out with the puppet in front of the camera. Blocking out the puppet moves gives the cameramen an opportunity to shoot lighting tests and finalize the camera moves. After watching the trial rushes, the filmmakers can request alterations before the sequence is rehearsed with the animated character. It is then finally animated and shot.

To achieve precise lip sync, the animators work from a dope sheet with a frame-by-frame phonetic breakdown, as well as a sophisticated video-assist system. The system incorporates the recording of the voice to which the animator is matching the lips and mouth, and plays back the soundtrack in sync with the pictures as they progress. An integral black-and-white frame store allows the animator to display the previous frame for comparison with the next frame of animation. The video-assist system is also loaded with continuity shots and other reference shots that can be used if needed.

Known as PVR (Perception Video Recorder), the system is made by a Canadian company called Digital Processing Systems (DPS). Before the system was adopted by Aardman, it was given an extended trial run by the studio's animation trainees. During this trial period, Aardman and the U.K. division of



Co-directors Peter Lord (top) and Nick Park find it easy to get their stars out of their trailers.

Bottom: The camera captures Mr. Tweedy, who is convinced his chickens are up to no good, as he makes the rounds. Lighting fixtures on the show included: Strand's Quartet 650W Fresnels, Prelude 16/30 profile spots, Prelude 28/40 profile spots, Cantata 1.2kW Fresnels, Studio 2kW Fresnels, Pollux 5kW Fresnels and Vega 10kW Fresnels; Par-16s; Altman Micro Ellipses; and Kino Flo 4' 2-banks, 4' 4-banks, 4" and 6" Mini Flos and Micro Flos.

Flying the Coop

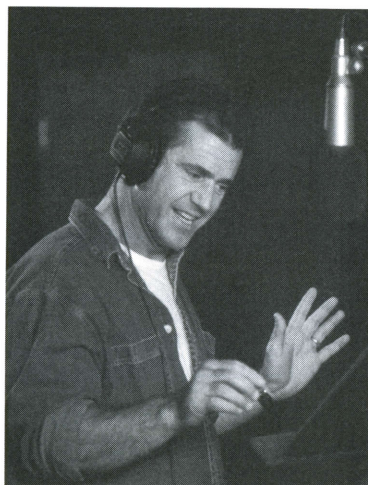
Near right: The chickens improvise a hot tub for Rocky, the only eligible bachelor in their midst. Below: Mel Gibson records Rocky's dialogue. The audio track is typically the first step in an animated film, and Lord says that script revisions — a hallmark of American films — made it necessary to call actors back several times to record new dialogue.



DPS developed their Animate software to make the whole system more user-friendly for animators. It has now been fully adopted by Aardman and other animation studios.

Chicken Run was shot entirely on Fuji's Super-F 8532 125 ASA stock. The show's lighting units were tungsten, comprised of Rank Strand theater lighting and also 12-volt sources that included Micro Ellipse lights (miniature profile lamps that could be focused). Riddett found Kino Flo units to be invaluable, especially the miniature tube lamps, which were used to provide a soft light within the interiors.

Detailing the overall setup, Riddett explains, "We actually had Rank Strand design the racks for our lighting units, along with the control units, because we needed a system that would alert us if any lights blew out. The animators could be working on a shot for a week, going in and out, off to lunch and then coming back; if a light blew out, it might not be noticed, and you couldn't have a spark [electrician] constantly checking the set. In the setup we used, an alarm would sound if anything [malfunctioned]. It was fine for most lights, but some 12-volt lights would not fit the system, so we still had to do [regular] checks."



Stop-motion cinematography requires exceptional technical precision. Cameras must be completely light-tight, camera movements have to be exactly repeatable, and close-focusing lenses are mandatory. Aardman uses Mitchell BNC cameras converted to spinning-mirror reflexes by Doug Fries. All of the units have color video assist for the PVR video-assist systems. A special baffling fits tightly over the shutters so that no light can get through to the film in the gate while the animator remodels the puppet — which can take up to an hour, with lights burning all around the camera. When exposing just one frame at a time, it is critically impor-

tant to have consistent exposure to avoid any possibility of flicker, so the studio built its own camera motors to ensure this within a range of 1/4 of a second to six seconds.

According to technical director Barnes, Aardman is now into the fourth generation of camera motor designed for this purpose by its senior electronics engineer, Allan Yates. "The motors can be triggered by our lighting racks and can link with motion-control," Barnes details. "We can therefore run a sequence involving a lighting change, a motion-control move capturing a video-assist frame and firing the camera, with the animator just pressing one button — although the animators often prefer things to be a bit less automated. This is particularly important because the motion-control, lighting setups and everything else are done before the animator moves on set, where he's left in isolation and takes charge of the pre-set camera moves.

"Once the size and shape of the camera was determined, we built our own geared heads," he continues. "That was important, because it was hard to know in advance whether motion-control would be used, so very often we would set the camera up on a motorized head on a tripod. That way, if we needed a slight pan or tilt instead of a locked-off shot, we could just plug a motion-control computer into the head and add a move to what was a static shot, without the camera assistants having to break that setup down just to put on another head that was motorized."

Fries originally converted 24 cameras for Aardman, but halfway through the shoot for *Chicken Run* Barnes had to order five more units to keep up with the demands of production. The filmmakers used Canon K35 prime lenses (in sets of 25mm, 35mm, 50mm and 85mm), which were specially converted in Japan for close focusing. These were used in conjunction with Cooke 18-

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Flying the Coop

The sets for *Chicken Run* took up more than 100,000 square feet at Aardman's studio in Bristol, England.

Although the filmmakers initially planned to use 24 units — 12 shooting while 12 were being prepared — they eventually had to employ 28 units to keep up with the production's demands. A crew of 300 labored on the film during its 20-month shoot, and 32 animators worked on as many as 32 sets each day, often in two different scales.



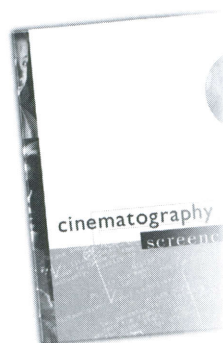
100 T3 zoom lenses and one 25-250mm T3.7 Cooke zoom. Barnes offers, "In the studio, we traditionally stick to the Canon primes, as they are all reasonably well color-matched, have similar coatings and are contrasty to a similar degree. They intercut pretty well with the Cooke zooms without significant grading problems." For wide shots in tight corners, the production made use of two 14mm Canon still-photography lenses converted with BNC mounts. The film was shot in the 1.85:1 aspect ratio. Rigging, supporting models and the edges of sets were just on the edge of the framing area, meaning it could not be shown in a deeper format, according to Barnes.

The crew made considerable use of motion-control rigs on *Chicken Run*. The filmmakers used

Mark Roberts' Milo motion-control platform on tracks, which provided the absolutely accurate repeatability that the 3-D animation required. Riddett says the rigs were capable of all the movements he wanted. Their ample vertical range is evident in the film's opening nighttime sequences, which also exemplify another Aardman trademark: the ability to create a sense of mystery through extreme contrast. "We particularly wanted a lot of dark shadows, just to see how far we could get away with [establishing] a sense that you are not quite sure where you are," Riddett notes. "[We let] you see details such as dark shadowy forms behind huts or barbed wire. You can't quite see the characters at the outset — they are simply seen in silhouette." To achieve the necessary depth of field, the Canon primes were stopped down to between T11 and T16 for the majority of the shots, an atypical use for these fast (T1.3 or T1.5) lenses; they were also employed much closer to the action than they were originally designed to be.

The physical scale of the puppets has an important bearing on the animation itself. In 3-D animation, if a puppet is too small it is generally difficult to achieve fine detail, particularly in expressions; if the puppet is too big, there is too much Plasticine to move around to animate faces effectively. On *Chicken Run*, Aardman's animators mainly used two scales. For the majority of shots, the chickens were 9" high and the humans 12"; in shots featuring distant characters, the chickens were smaller. Chickens and humans were seldom in the same shot, and when they were, the humans were used in the foreground and small-scale chickens were used in the background.

Many of the film's sets were built in perspective to enhance the effect of distance. For the opening sequence, in which the farmer kicks a gate shut on the hapless chickens,



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by Peter Ettegdal

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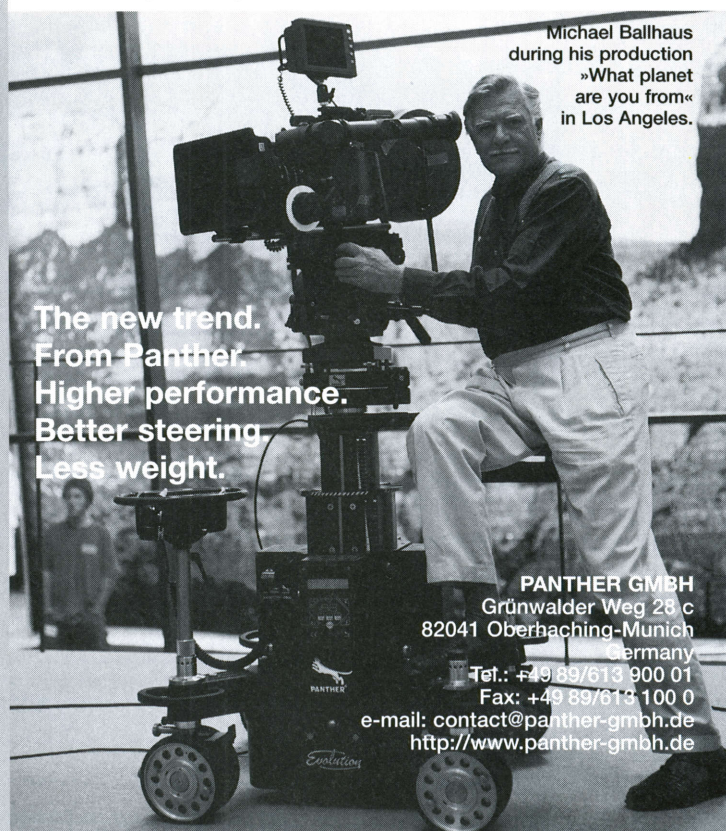
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Flying the Coop

The chickens, with Rocky and Ginger at center stage, celebrate the success of their makeshift flying machine.



only a very large-scale boot and part of the farmer's leg were used in the shot to complete the illusion. Seen in this context, Aardman's attention to the technical minutiae of its equipment-engineering has been vital in order to convincingly translate its small puppets to the big screen.

Most of the film was shot "double frame" — that is, with two identical frames of each character pose shot consecutively, allowing animation of the character 12 times per second rather than 24. To speed up the process even further, assistants made a set of different mouths in different phonetic shapes for each character in advance; these were substituted as required and blended into the face.

Chicken Run required an unusually large team of animators, and Aardman set up an intensive six-month animation course, in collaboration with the University of the

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West of England, to prepare them. Loyd Price, the supervising animator on *Chicken Run*, was heavily involved in the training, making sure everyone had the Aardman "feel" and nurturing their skills to ensure that any of them could work on the same character without the changeover being noticed. "Our philosophy," Lord says, "is that the animators are not just a pair of hands, they are performers. What we are looking for is the best of the director and the best of the animator together. Very rarely do we have to tell the animators not to do a certain thing or not to follow their instincts — more often, their instincts are inspired and helpful, and sometimes they'll come up with a great idea that completely makes the shot."

Ironically, two of Aardman's most experienced animators, Lord and Park, were too busy directing to animate on *Chicken Run*, and they

were also left with little time to storyboard. To help the filmmakers, DreamWorks sent two storyboard artists, David Bowers (who served as storyboard supervisor) and Rejean Bourdages, over to Bristol to work on the production.

Like all animated films, *Chicken Run* relies heavily upon sound design. After a 20-month shoot, the team finished up in post-production at De Lane Lea Sound Centre in London. It was an unusual job for the facility, which is more accustomed to working on live-action features that already have at least the voices and some sound effects in place. On *Chicken Run*, all the sound team had were the voice tracks recorded by the cast at the outset (or subsequently re-recorded individually) in a studio.

Technicians at De Lane Lea were amazed to be working on such virgin audio terrain, and Lord was

surprised at the number of sound layers they managed to build in to match the visual detail achieved by Aardman. These sounds ranged "from a creaking gate to a rustling tree, every touch of flesh on flesh, even knuckles cracking," says Lord. Scenes such as those set inside the chicken-pie machine are remarkably reinforced by the recorded tracks.

Of course, the film's puns and allusions stand alone and represent yet another level in this multi-layered movie, though some of the jokes might not play in every country. The directors are confident that the film's referential gags are universal, but they were still careful not to hang essential plot points on the verbal gags. As Lord concludes, "In a sense, they are throwaway lines — if [the audience] gets them, great; if not, they are none the poorer." ■

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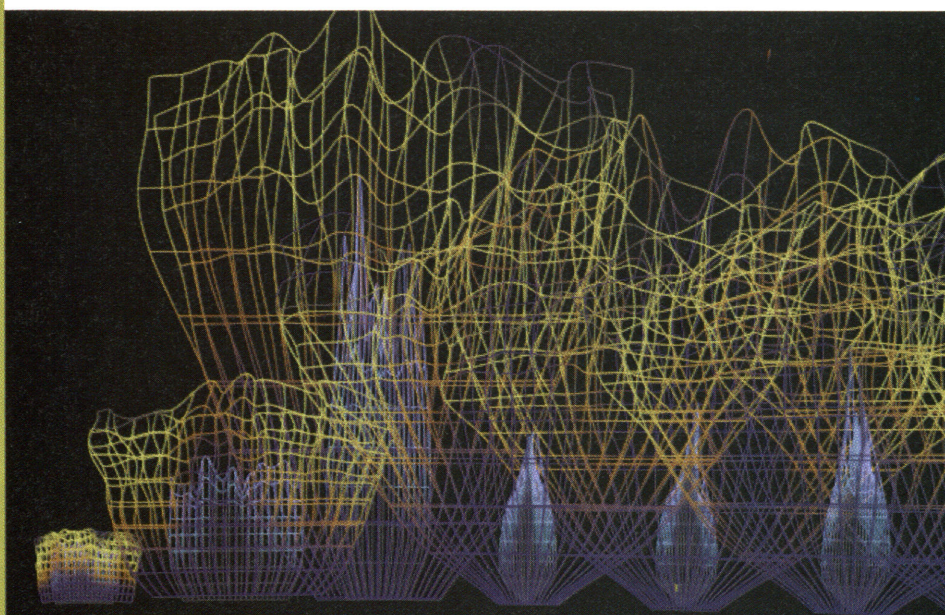


Meticulous visual effects animate “the world’s most awkward animals” for *Chicken Run*.

by Ron Magid

This summer is arguably the most animated season in years, with several must-see flicks utilizing this time-tested art form. While most of these films mix and match traditional animation, visual effects and photographic techniques, DreamWorks SKG’s *Chicken Run* uses neither 2-D nor 3-D CG animation. Instead, this stop-motion-animated saga from Aardman Animations was created using physical models that were positioned and then photographed one frame at a time, in the grand tradition of Willis O’Brien and Ray Harryhausen — though the result is an epic of slightly smaller proportions than *King Kong* or *The Seventh Voyage of Sinbad*.

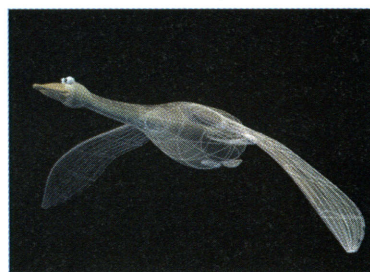
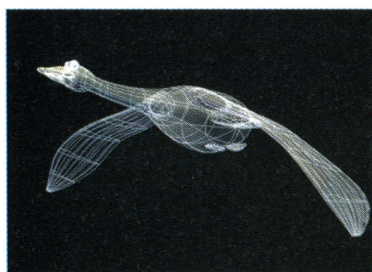
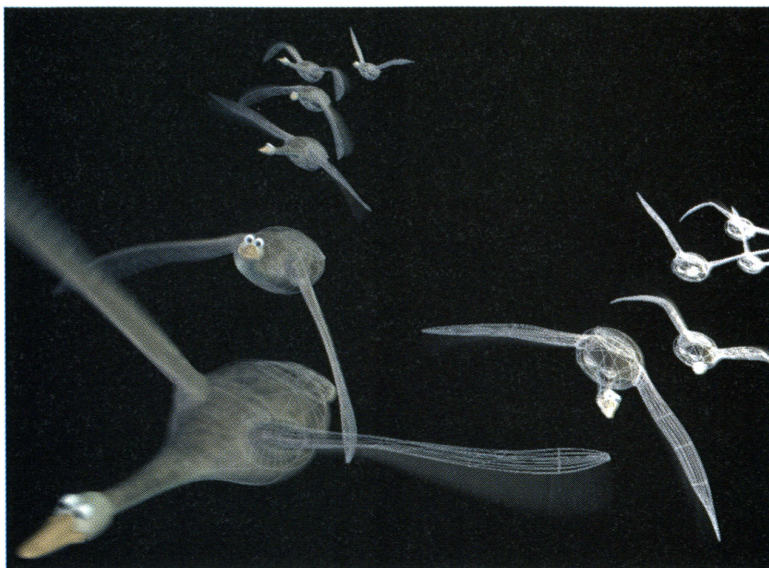
It might come as a shock to learn that the longtime collaborators behind *Chicken Run* — producer David Sproxton and co-directors Peter Lord and Nick Park — didn’t all start out together in the animation biz. In fact, they teamed up after Lord and Sproxton, who founded Aardman in 1972, met Park while lecturing on animation at his college



in the early 1980s. When the three animation fans realized that they all worked in the fairly obscure medium of Plasticine modeling clay, they joined forces. But success was far from instant. "When we started animating with clay, as far as I know, no one was doing it at all!" Lord says. "It was totally experimental because there was no one to copy, so we kind of made it up, and I have to say, it was exceedingly unfashionable and very hard to sell. We nearly gave up the whole thing a few times because there was just no work. I quite vividly remember someone at the BBC saying, 'You'll never sell this in America.'"

Fortunately, that person was wrong, and the folks at Aardman have been happily charming the world ever since with their stop-motion antics in short films, music videos and TV commercials. However, the studio's first full-length feature, *Chicken Run*, presented its own unique challenges, not least of which was the fact that its protagonists were chickens. "We usually use Plasticine puppets because clay is so expressive, but it has its many practical and artistic drawbacks because you can't put patterns or color on it," Lord admits. "On *Chicken Run*, the puppets were immensely complicated. Their bodies were made of silicon with very elaborate skeletons inside. It's all super high-tech up to the neck and shoulders, and then they have regular modeling-clay heads and arms and hands with wire inside — it's a very perfect match. I wish the characters could be all clay, but it's practically impossible, especially with chickens! Chickens are the world's most awkward animals."

This also created various problems in terms of the studio's preferred style of shooting. "We've always prided ourselves on doing stuff in-camera," says Dave Alex Riddett, *Chicken Run*'s supervising director of photography, who has served as a lighting cameraman,



director of photography or director on numerous short films and more than 50 commercials. "The chickens were top-heavy with thin legs, which made them very difficult to animate. In order to get really good animation, we had to use a combination of sturdy rigs that were animatable, which later had to be removed digitally."

Because the entire camera move for every shot is preplanned and motion-controlled, Riddett usually filmed a clean safety pass: "We'd take the characters and the rig out, and then refilm it so we'd get all the background details behind the

rig, which could then be painted back through in postproduction at Computer Film Company."

Fortunately, rotoscoping stop-motion footage is a much easier task than working with live-action material, which enabled CFC (*Sleepy Hollow*) to entrust that work to junior artists without risking any compromises. "Without motion blur to worry about, you don't have the depth of ' nastiness ' that live footage presents," notes Mark Nelmes, co-supervisor of digital visual effects at CFC.

Temperature changes sometimes wrought havoc, causing the

Opposite page: In one of *Chicken Run*'s most dazzling sequences, Ginger and Rocky must escape from a pie-making machine. The flames in the machine's oven were created digitally by Computer Film Company; the bottom photo shows the effect at the wireframe stage. This page: In addition to creating natural phenomena such as rain, fire and smoke, CFC also animated a skein of geese flying over Tweedy's Egg Farm — a poignant reminder of the chickens' predicament.

Recipe for Success



CFC created these ominous plumes of smoke for a scene in which the Tweedys' sinister pie machine splutters to life.

sort of problems no live-action cinematographer will ever have to contend with, such as a set warping during a shot. Such hazards are rife in the stop-motion world, where three seconds of footage per animator is considered a fine day's work. "We have shots that took three weeks to shoot, and quite often little things moved, no matter how well we locked down the sets," Riddett explains. "The stage got very hot during the day and cooled down overnight, so we'd come back after a weekend and find that the set had shrunk or the camera seemed to have sagged. If we hadn't finished the shot, sometimes we'd just let the room heat up enough [so that] the set would actually spring back into place, or we'd put a lighting stand under the set to push it back up. Occasionally, just adjusting the tilt of the camera slightly would compensate for it."

"The length of time that stop-motion shots take can drastically accentuate set creep and the like," Nelmes agrees. "We then had to deal with the question of how much of these [usually] minute differences we

wanted to fix, because frame-by-frame variations are part of the texture, quality and identity of an Aardman film — they might even be seen as endearing."

Consequently, whenever CFC was called on to rectify a distracting flaw, great care had to be taken to not make any given shot too pristine. "All Aardman stop-motion material has a visual texture that includes small imperfections [such as] slight flickers in light levels or fingerprints in the clay," observes Paddy Eason, another co-supervisor of digital visual effects for CFC. "To try to remove all of these would be a big mistake. After all, they don't want the movie to look like CGI! But when the people at Aardman judged these imperfections to be a distraction, we cleaned them up."

If the set motion proved too distracting, the safety passes that Riddett and fellow cinematographers Tristan Oliver and Frank Passingham shot of each set, before the animation commenced, enabled CFC to replace the offending background at the critical point. Says Eason, "This only became an issue

with clean passes for rig removals, where the sets had shifted gradually throughout the animation of a shot so that the set didn't quite line up with the clean pass. In that case, a little bit of hand-tweaking would be required by our paint artists and compositors to selectively realign areas. It wasn't a huge problem."

The time it took to animate the longer shots posed other challenges. "During a three-week shot, lights begin to blow, and we [often] had to change them," Riddett says. "We had specially designed racks for the lights on our lighting grids that could sense whether a light had blown. But if we put a new bubble in the lamp, it didn't always go back at the same intensity. We'd therefore go for the 'white man's magic,' shooting a safety pass so CFC could actually paint back in a whole section of the background. If there was a problem, we didn't want to start all over again."

Fixing light pops halfway through a shot could be quite difficult, according to Eason: "It tended to be only one light out of a multi-light setup; for example, the fill light

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CFC MAKES THE GRADE

by Ron Magid

Aside from the fact that it features a cast of singing, dancing and talking poultry, *Chicken Run* presented a number of unusual post-production problems because it was created almost entirely via stop-motion animation. "Frequently during the course of animation, when mistakes or revisions occur, the action is stopped and started again from a known point," says Tom Debenham, digital grader and designer for Computer Film Company. "These 'cutbacks' can mean that for a given shot, there could be numerous breaks in the negative, some only several frames long. In a traditional neg-cut situation, this would generate a master-cut negative with thousands of cuts in it, which would be tremendously time-consuming and also produce a physically fragile master."

For all of these reasons and many others, *Chicken Run*'s filmmakers decided to let CFC digitally scan, grade, conform and record the entire film using CFC's in-house Digital Lab facility, making it one of the first full-length 35mm feature films to have undergone such a process. CFC's system employs a proprietary film scanner that is capable of scanning 35mm and 65mm film formats up to 7K resolution at 42-bit color depth. "We avoided the route taken on other projects [such as *Pleasantville*], which used a high-end telecine, and instead did a full film-quality scan," Debenham says. "This meant that there would be minimum handling of the original negative, and maximum flexibility to keep creative control up to the last minute."

"We developed software that auto-conformed our scans on the fly

to an EDL [edit decision list], then scanned all of the usable shot material in a form known as 'handles long, cutbacks gone,' which gave as much freedom as possible for cutting. This kept the door open for later revisions without the need to touch the precious original negative again, let alone cut it."

There were other issues that could be addressed digitally as well, such as sets that warped or lights that blew during a shot; a stop-motion-animated shot can take several weeks to shoot because each frame is painstakingly animated by hand. "Because the production was shot over nearly two years, with as many as 30 separate units running simultaneously toward the end, there were inevitable problems of continuity when scenes were reshot or sequences were assembled from material shot at different times on different sets," Debenham observes. Because the film was already digitized, CFC's artists could easily remove rigs and fix animation or lighting problems. "Although the lighting was amazingly consistent, there were frequent and unavoidable slight variations in light levels, which we were able to correct to a much finer degree than is possible in conventional laboratory color-grading."

Once the material was scanned, CFC used its in-house software grading system to work on proxy images at monitor resolution generated from the full-res scans, enabling technicians to keep the entire film on disk for real-time review at the highest viewable quality. "When the 'fine cut EDL' arrived for a given sequence, we were able to quickly auto-conform from the individual scans to generate a viewable sequence for grading and consequent

output," Debenham says. "We then incorporated the grade using a 'grading decision list,' which invisibly maintained the identity of each frame of the camera negative with its original keycode throughout the digital process."

Final output to fine-grained intermediate stock was accomplished with an Arrilaser recorder. CFC was, in fact, the first European beta test site for this sought-after machine, which offers fast, high-quality, full-film-range output (see *New Products*, AC July '00). The results of this extraordinary digital manipulation far exceeded CFC's original intent to merely protect the negative by grading the film digitally. "It became a much more involved creative process," Debenham states. "In collaboration with [the film's cinematographers], the whole atmosphere could be further enhanced with selective contrast, shadow, highlight and saturation. The controls we used directly reflected the way film responded in terms of exposure, gamma toe and knee, so what we did was sympathetic to film rather than video requirements. Being able to run freely through a sequence or series of sequences in real time gave us the freedom to explore the potential of dynamic grading."

In fact, having every shot digitized saved *Chicken Run*'s supervising director of photography Dave Alex Riddett and his colleagues a lot of time. "I'd come in myself or with one of the other lighting guys and sit with a 'grader,' and we'd just go through it a sequence at a time and look at it on the monitor," Riddett says. "That way, in situations where we had little corrections — [such as when] lights went [out] during a shot — we could do them digitally instead of trying to do them in a film lab, where the point system would be too great to handle such subtle changes easily. It was a godsend!" ■

on one character would disappear. Those were hard fixes, but they could always be done through a combination of keying the various characters' colors, rotoscoping, automated matching of sampled brightness values, and so on."

Other kinds of fixes involved cleaning up places where the animators, who often had to work in awkward areas on the large model sets, had inadvertently moved things during a shot. "You would see things like dirt or straw on the ground, or a piece of cloth jiggling around," Eason recalls. "We could tidy stuff like that up quite easily, saving the animators a large number of reshoots."

Nelmes, who had worked with Aardman before, says the crew's attention to detail was more noticeable than ever before, despite the fact that *Chicken Run* represented an enormous increase in the studio's scale of production. The typical Aardman short involves a few dozen artists, but 300 people labored on *Chicken Run* during its 20-month shoot. Thirty-two animators, split into two teams led by supervising animator Loyd Price, brought the poultry to life as Riddett, Oliver and Passingham oversaw shooting on as many as 32 sets a day in two different scales.

"Even people very close to the process assume that when they come here, they're going to find six guys in a garage around a little table," Lord says with a laugh. "But what they actually find is a huge studio. On this movie, we had 35 sets shooting simultaneously, many of which had the same lead characters in them. During one day, Nick Park and I would talk about 12 different shots in 12 different parts of the movie: one a tender love scene, another a big slapstick scene, and one an action-thriller scene. Although we work in this miniature, super-focused way and are concerned about every frame, we don't want to be technical about it. We need to think creatively

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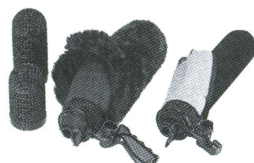
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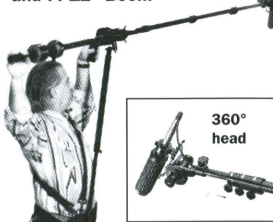
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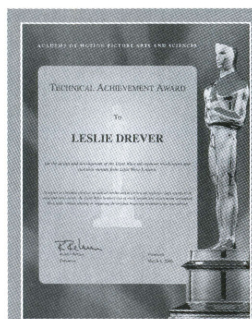
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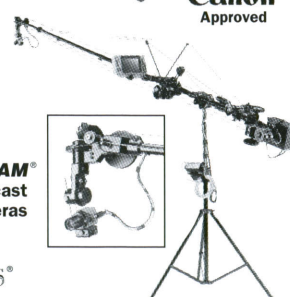
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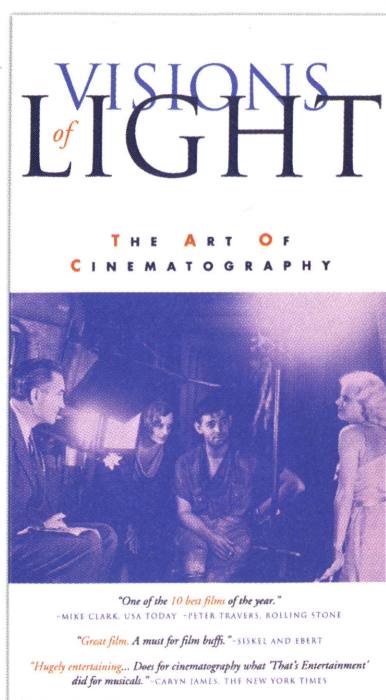
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Recipe for Success

so that within each of these scenes, there's a curve, there's a joke to be told, there's a revelation to be [unveiled] — whatever it is. To shoot across countless sets over 18 months with dozens of animators, and still maintain the characters' integrity, [was] the most tiring thing I've ever done in my life."

The Aardman folks were therefore pleased to get some extra digital help from CFC's animators. "For the most part, the digitally created elements that we produced were natural phenomena, such as rain, smoke, steam, flames, water — as well as a gravy explosion," says Dominic Parker, CFC's supervising CG animator, with a grin. "We used Houdini and RenderMan to produce the CG effects. We knew that these elements had to fit in with the universe that Aardman had created; texturally they'd have to be photo-realistic, but in terms of their dynamics they were more caricatured. We also knew that they used these elements not as decoration, but as part of the storytelling or to express the emotion of a scene.

"[For example], the rain turns from a light shower to a deluge as the truth about Rocky [the rooster] dawns on the crowd of chickens; evil smoke belches from the chimney as the pie machine jolts into life; the steam from the gravy vat shows how close it is to exploding," he continues. "Given that the behavior of these phenomena did not need to be physically correct, we were able to skew the physics to convey the emotion of the scene. This continues right through to the idyllic lake in the final shot. We were aware that the animators at Aardman had ingenious techniques for doing a lot of these effects. Opting for a digital route on these elements made sense, because it freed up the animators to work on the character animation and tell the story — though we were lucky enough to be given a creature-animation shot." (Animator Richard

Clarke created a skein of geese flying over the farm as a poignant reminder of the impossibility of the chickens' escape.)

In addition to adding certain CG elements, CFC handled some bluescreen compositing, particularly in shots with mixed scale models and multiple planes of animation, and also in the climactic flying-machine sequence, where it would have been very hard for the animators to animate the characters in a studio large enough to get sufficient height above the ground. "There's a nice shot of the machine flying off into the sunrise," Parker says. "The fence in the foreground was shot against blue, as was the main landscape and the flying machine. We then faded between three separate Photoshop skies for the sunrise effect and added a distant line of hills on the horizon in the comp. I'm sure Aardman could have done all of that in-camera, but it would have been a far [more difficult] shoot."

As with the best movies, it's the film's characters the audience has to believe in — even if they are Plasticine chickens. "It is a serious thing, actually," Lord says. "However, we did have a few merry laughs, because we were doing great big close-ups of puppets that were eight inches tall with two-inch heads, knowing that these things were going to be slammed onto movie screens around the world!"

"We've got to hold the screen with these little pieces of clay for several seconds of emotional intensity, so viewers will believe that they're seeing living, breathing, thinking characters," he concludes. "Imagine your own efforts with modeling clay when you were at school! When you think of it in those terms, it's quite scary." ■

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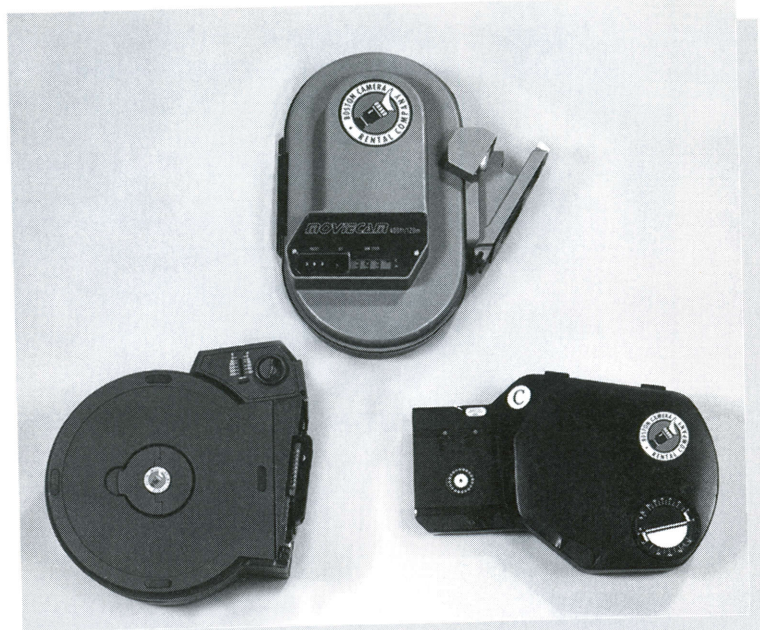
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All Aboard!



A beloved children's tale makes tracks for the big screen in *Thomas and the Magic Railroad*, a whimsical feature directed by Britt Allcroft and photographed by Paul Ryan, ASC.

by Rachael K. Bosley

Unit photography by Tom Collins, Mark Jacobson, David Milne and Karen Steyr

Few might have predicted that bringing the warm, cozy world of Thomas the Tank Engine to the big screen in *Thomas and the Magic Railroad* would create a triangle of production stretching from a Toronto studio to Pennsylvania Dutch Country and across the Atlantic to the Isle of Man. But as the details of Thomas's feature-film debut began to take shape last year, it became clear that the project would require some unusual location work — including shooting in two active train stations.

Expanding upon Britt Allcroft's hit PBS series *Shining Time Station* (which made its American debut in 1984 and is now being rebroadcast on Nickelodeon), *Thomas and the Magic Railroad* follows Lily (Mara Wilson), a little girl who leaves her home in a big city to visit her lonely, widowed grandfather (Peter Fonda) on Muffle Mountain. Through a mix-up at the train station, Lily ends up in the lush, idyllic town of Shining Time and is soon transported to the Island of Sodor, the toy-train world where Thomas has long negotiated with his fellow steam engines and traded barbs with bullying diesels. There she learns of a problem that her grandfather, a former railroader, can help solve for Thomas and his friends.

According to cinematographer Paul Ryan, ASC, it was always a given that the Island of Sodor sequences would be shot in the same Toronto studio that had been used for *Shining Time Station*, and that the same models would be used with expanded sets in the film. "If there was one known factor about the film, it was that the Island of Sodor material was going to use the same form and imagery as the TV series," says Ryan. "Britt Allcroft [creator of the series and writer/director of the feature] and the producers wanted a base of appeal for the film, and they knew kids would be the most comfortable

Photos courtesy of Destination Films and Paul Ryan

with that [familiar setting].”

However, that certainty created one big uncertainty: how the tiny models would look on the big screen. “It was really unknown how they would translate,” recalls Ryan, who was involved in about three months of preproduction. “The models are only about eight inches long, which surprised me; I thought they’d be bigger. There were questions about how the trains’ texture would appear, how much smoke to use, what speed to run them at and whether they’d seem out of scale, and a lot of tests were done.” The filmmakers also tested a variety of film stocks, searching for one that would render the models’ bright colors the best. “I wanted to have a palette that would have clarity, one that would also bring out primary colors,” Allcroft says. She was happiest with Fuji Super F-250 8551, and she and Ryan, a longtime Kodak user, agreed that the models would be shot on Fuji and everything else would be shot on Kodak.

The locations for “everything else” were where the production became really interesting. Allcroft, who had been thinking about a Thomas feature for several years, says she wanted an overall look of “magical realism, like fantasy built onto reality.” She elaborates, “I had a very clear idea early on that I wanted a marriage between the familiar and the mythical, to create a look [that children felt] they could step into. I wanted the look of watercolors come to life.”

By the time she sat down with Ryan last year, Allcroft had amassed a huge pile of photographs and paintings whose color palettes, landscapes and use of light suggested the imagery she wanted for *Thomas*. These included O. Winston Link’s famous steam-engine photography from the 1950s, Norman Rockwell’s images of small-town America, and paintings by Edward Hopper and Don Hatfield. “From the cinematog-



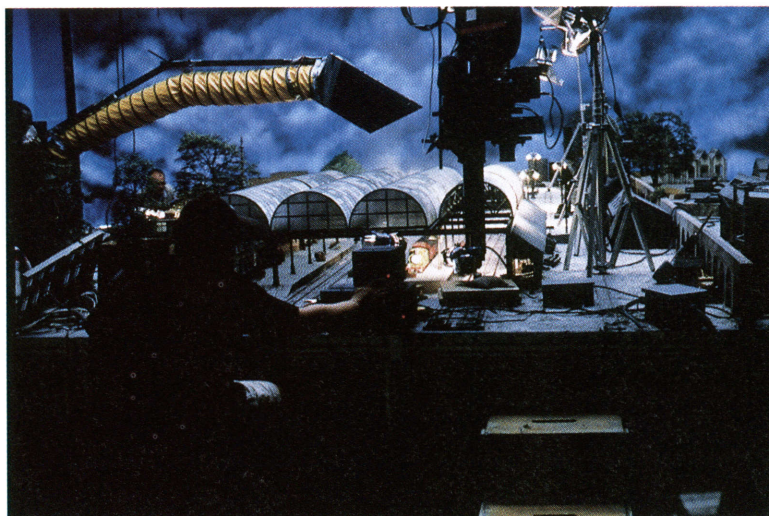
rapher’s standpoint, it’s great to have a director come in with imagery that’s so striking but not specific—it puts something in the back of your mind, and you can come back to it on your own,” says Ryan, whose feature credits include *Wildflowers* (see AC July ’99), *Box of Moonlight* (AC July ’97) and *Other Voices, Other Rooms*, as well as second-unit photography on *The Horse Whisperer*, *A River Runs Through It* and *Days of Heaven*.

Allcroft and Ryan knew that a proper location for *Shining Time* was key. “It had to be a golden place, bright and cheery, with rolling hills,” Ryan says. “We also needed it to have a real train, and we needed to be able to look down on the town from

Grandpa’s mountain.” Because the production was based in Canada, there was “a certain push” to stay in the country for economic reasons, according to Ryan. “We considered an area in western Canada, but in the end we decided that the landscape was so spectacular it would overwhelm the story. The world of Thomas is small and cozy—Muffle Mountain should really look more like Muffle Hill.” Pennsylvania, which had real American steam engines and provided locations for the last few weeks of principal photography, was ruled out as well because it was too expensive to shoot the entire production there.

It was Allcroft, a native of England, who suggested the Isle of

Opposite page: Thomas the Tank Engine is menaced by an evil diesel in *Thomas and the Magic Railroad*. The animated sequences were shot in a Toronto studio using the same models popularized in the *Shining Time Station* TV series. This page, top: The period train supplied to the production by the Strasburg Railroad shares space with a modern Amtrak train in Harrisburg, Pennsylvania. Shooting in an active, urban train station gave the crew some nervous moments. Below: The model-unit crew sets up a shot of a miniature train station for a sequence set on the Island of Sodor.



All Aboard!

Top photo: Director of photography Paul Ryan (in white hat) and his crew get ready to shoot the Strasburg Railroad in Pennsylvania Dutch Country. Below: The crew sets up a shot on the Isle of Man, a visually spectacular location that created many challenges for the filmmakers.



Man, a 30-mile-long island that lies in the Irish Sea off the northwest coast of England. While vacationing in Scotland in the summer of 1998, she read an article about the Isle of Man Film Commission's efforts to attract film production. "I went there a couple of days later and was truly amazed," she says. "Thousands of miles away from where I'd always imagined [Shining Time] to be, there it was." Ryan notes that many believe the Isle of Man actually inspired the Rev. Wilbert Awdry to create the Railway Series, the children's books that introduced Thomas and his friends in the 1940s. "There's a narrow-gauge railroad that still transports people, and it looks exactly like Thomas," Ryan says. "There's also a parish called Sodor!"

It also helped that the self-governing crown possession offers

substantial tax breaks and investments to the film industry. In 1995, the government gave the film commission £1 million to attract such productions, and roughly 20 features — including *Waking Ned Devine* and *Alice Through the Looking Glass* — have been shot there since.

Thus, in July of 1999, while model unit director of photography Terry Permane and his crew began shooting the model-train sequences in a Toronto studio, the cast and crew headed to the Isle of Man for four weeks of principal photography. But while the location's landscape and financial incentives were significant assets, the filmmakers quickly discovered that its geography and climate created some daunting logistics.

First, there was the weather. "There's a reason why places like that are so green," Ryan notes with a

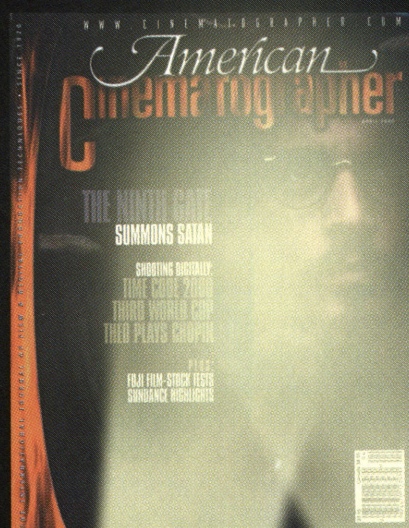
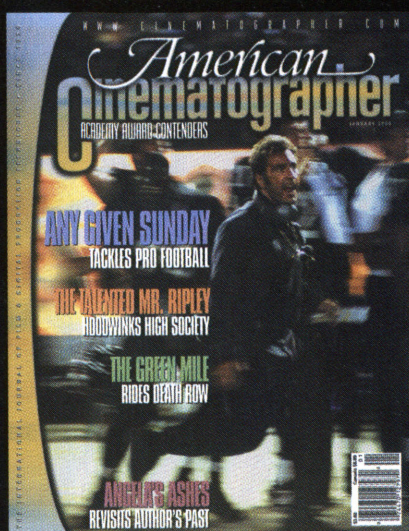
laugh. "It rained a lot, almost every other day, and *Shining Time* is supposed to be cheerful and sunny. We therefore shot a bit tighter than we would have ordinarily, chose our days and tried to fill the frame with color. We used a lot of HMIs and negative fill!"

The crew also found that obtaining and transporting necessary equipment took a high level of coordination. "Access to things was difficult," says the cinematographer. "They don't have the kind of transportation we're used to, so we had to use an endless amount of small trucks [to move gear]. Also, we couldn't just call up a piece of equipment in a day, because it took a day to come over from the mainland and a day to get back."

One piece of equipment Ryan had been looking forward to using was the Barbour All-Terrain Tracking vehicle, commonly called the BATT-mobile, combined with a Librahead. He says that John Toll, ASC recommended this approach after employing it on *Braveheart*. "I was going to use it to shoot a horse-back-riding sequence in a field, tracking closely with the horses, but we only had it for two days, and it poured rain both days," Ryan recalls ruefully.

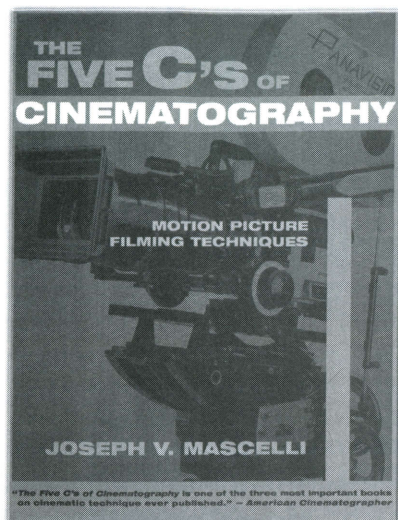
When the weather cleared long enough for him to shoot the sequence, Ryan says he relied on a trick from Francois Truffaut's *The Man Who Loved Women*. "We put the camera on sticks and did long-lens panning," he details. "Truffaut used it to follow a woman; he put the camera in the center of a circle and had her walk around the circle while he panned with a long lens. If the subject is moving fast enough, you don't notice the background because it's blurred. For my sequence, I stayed very tight on the horse and had it run in as small a circle as it could manage and just kept shooting. It's a good trick — you can get away with a lot if you're tight on stuff."





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All Aboard!



Above: Grandpa (Peter Fonda), a lonely widower and former railway engineer, awaits a visit from his granddaughter, Lily. Below: Lily (Mara Wilson) takes a stroll with her friend Stacy (Didi Conn) in *Shining Time*.

Ryan relied on his favorite cameras, the Moviecam Compact (A-camera) and the Moviecam SL (B-camera and backup), and used Zeiss primes, an Angenieux 10:1 zoom and a Cooke 5:1 zoom. "I try to always have the SL on the set, almost like you'd have a Nikon around your neck," he notes. "I always have it set up with a short zoom or a prime in handheld mode; that way, I can use the time that might otherwise be downtime — while someone's laying dolly tracks or setting up a complicated shot, for example — to take the camera, run in and grab close-ups, scenics or interiors. Even on a stage, you always need that insert of some-

one doing something or a little dialogue scene on the side. I'm a real fan of that approach."

The filmmakers were surprised to discover that it would be less expensive to transport a Canadian crew to the Isle of Man than to hire a British crew from the nearby mainland. "The Canadian crew turned out to be quite good," Ryan says, adding that his approach to lighting was often a bit different from theirs. "I tend to use a lot of soft light, particularly China balls, and create a big source of light, whereas they were more used to hard lights coming in with a lot of flags. We had to work fast, with many changes at the last



minute, so I didn't want a jungle of flags restricting the actors and the camera. Often I'd say, 'Let's light this — and no flags!' Then I'd have to go off to talk to Britt or organize the next scene, and I'd come back and they'd say, 'Well, we just put in a couple of flags over here.'

"It always takes a little while to sort that out with a new crew," he continues. "There's a lot of creativity on all levels, and I don't want to be the sort of director of photography who says, 'Put a 2K here and a 200 there, exactly three feet away.' If you do that, you don't tap into the creativity of the gaffer and grip. You want to free yourself up from some concerns."

After processing film dailies at Deluxe London during the first week of the shoot, the production began shipping dailies to Deluxe Toronto, where the model and greenscreen sequences were being processed, in order to save money. Film dailies were eventually replaced altogether by video. "It was great to have the immediate feedback [from Deluxe London] in the first week," Ryan notes. "Shipping to and from Toronto was a long haul. Arguing for film dailies is sort of like a losing battle, but on the other hand, video is getting better." He adds he has been especially impressed with recent demonstrations of high-definition video dailies.

Throughout the shoot, whose final weeks included locations in Strasburg and Harrisburg, Pennsylvania, the cinematographer and his crew found that shooting in "live" train stations required not only a visual strategy but also considerable safety measures, particularly in Harrisburg, which served as Lily's big-city home. The production used one of the Harrisburg station's eight tracks. "It's amazingly dangerous to shoot in an active station, and they actually gave us a two-hour orientation about how to do it," Ryan says. "For one thing, the noise level of

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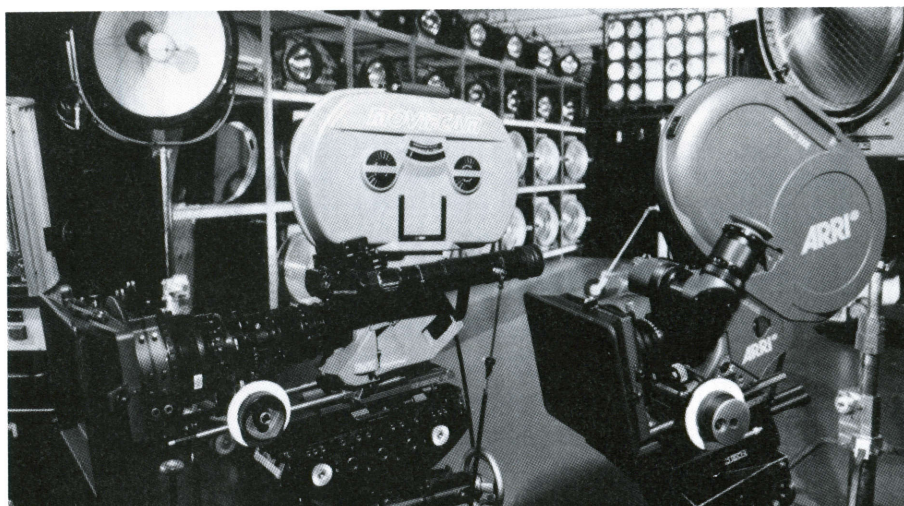
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All Aboard!

Director Britt Allcroft says she wanted *Thomas* to look like "watercolors come to life." For beauty shots such as this, Ryan photographed trains from a distance in an effort to diminish their size and make them seem friendly.



idling diesel engines is extraordinary all day long, and you don't always hear incoming trains. On a set, you're often running around — you want to back up suddenly or put a reflector board somewhere, for example — and it's easy to ignore the fact that a

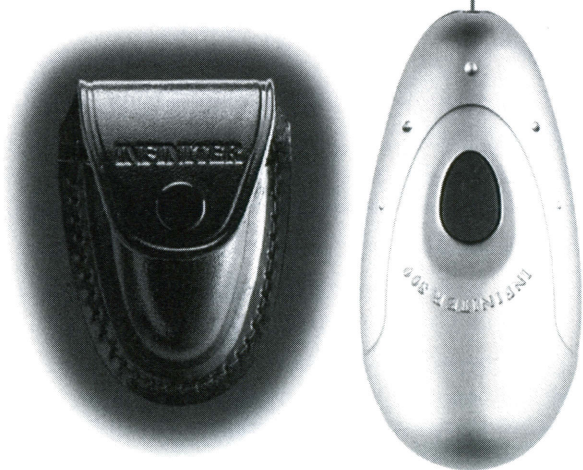
train might be coming. That slowed us down a lot."

Shooting the Strasburg Railroad in the Pennsylvania Dutch countryside was considerably easier. "The whole operation there is very, very good," Ryan remarks. "They've

been involved with a lot of movies, and [Strasburg Railroad coordinator Lynn Modinger was] very flexible." The railroad is featured in the film's shots of Lily's train heading from the city to Shining Time, and Ryan said his approach to these sequences was carefully planned to coordinate with the toy trains on Sodor. "The classic approach to photographing American steam engines is to take a low angle and make them seem enormous," he observes. "We didn't want that, because in the world of this film, trains are friendly and accessible. Instead, we took higher angles and shot more at a distance, trying to place the train in the context of a landscape [to make it seem smaller]."

The train station on the Isle of Man posed a different challenge — particularly in terms of integrating footage shot there with the Pennsylvania footage. "The narrow-

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gauge trains there are tiny, and they would come about every half-hour," Ryan recalls. "We actually built a shell of the Shining Time Station over the existing station, which kind of freaked out the locals. We had to be very careful about how the tracks were included in our shots of the station, because they're not as far apart as tracks for 'real' trains.

"We could shoot everything [on the island] but the angles toward the trains — those we got in Pennsylvania. In the film, you see Lily boarding the train on the Isle of Man with the station behind her, but the reverse angle of her on the train, waving back toward the station, was shot in Pennsylvania." He adds that smoke, which figures prominently in Thomas's world of steam and diesel engines, came in very handy for blending the footage. "We used a lot of offscreen smokers, because smoke helped us mask a lot."

The interior of Shining Time Station, where Lily interacts with the magical, miniature Mr. Conductor (Alec Baldwin), was built on a stage on the Isle of Man and features an elaborate mural by production designer Oleg M. Savytski. Ryan says he particularly enjoyed lighting those sequences. "The mural is beautiful, and if you're standing in front of it, it has its own dimensionality," he observes. "But on film, with characters in front of it, it becomes kind of flat. I wanted to paint it with light and accent little areas of it. I hung space lights for overall ambience, then used hard lights, mostly Lekos or 1Ks on full spot — it almost didn't matter where they were. So instead of being lit overall, the mural is accented with a soft shape of light here or there." Because the station is such a magical place, Ryan says he frequently lit through stained glass or used gels to create rainbow effects.

The cinematographer worked primarily with four Kodak stocks on the picture: Vision 500T 5279, Vision 250D 5246, EXR 5245 and EXR 5248. He also used Vision 320T 5277 for the train interiors. "It was terrific for that, because I lit the interior at one stop under and it still held the outside without gelling the windows."

Thomas and the Magic Railroad marks Ryan's first children's film, an experience he says he wouldn't mind repeating. He emphasizes, however, that Allcroft's lengthy involvement with the Thomas franchise made this project unique. "Britt had clearly been thinking about this for a long time," he says. "I've worked with a lot of first-time directors; there's a great enthusiasm in making your first film because you're bringing a lifetime of vision to it, really. That was certainly the case here." ■

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Here Comes the Sun

Earth's biggest star finally gets her close-up in *Solarmax*, a stunning new large-format film.

by Stephanie Argy

Unit photography by Peter Coleman, Tristan Milani and Yoshiaki Nomura.

This summer, on June 28, Queen Elizabeth II launched a new large-format film at the new Imax cinema in the London Science Museum. The movie, *Solarmax*, offers a look at the sun and the way that humans have regarded it over the ages. With footage from all around the world, as well as satellite images, the movie examines the evolution of man's relationship to the sun, from our earliest, primitive religious yearnings to the latest scientific knowledge. Because the movie was shot in large format, it will give viewers a vibrant, immersive experience. "For a cinematographer, it offers the ultimate film palette to work with," says Peter Coleman, one of four *Solarmax* cinematographers.

According to director John

Weiley, the origin of this project dates back to a large-format film he made called *Antarctica*. On that film, he met Dr. Robert Eather, a physicist specializing in the upper atmosphere who made a special lens so that Weiley could photograph the sun going around the South Pole. "We became friends and got to talking about our various obsessions," Weiley recalls. "His, for many years, had been trying to photograph aurora. He tried to enthruse me about making a film about it."

Weiley initially declined. At the time, there was still no way to photograph aurora satisfactorily, and furthermore, he felt it was not a broad enough subject for a large-format film. Eventually, though, technological advancements made it

possible to shoot the aurora. One important development was the release of Kodak's Vision 800T 5289 film stock, which Weiley says is unusually sensitive to the phenomena. He then began to rethink the movie and realized that if he approached it in a different way, focusing on the sun and human beliefs about it, he would have more than enough compelling material for a movie.

The film, however, was not a simple one to make. "We realized it was going to be a picture that was going to be done over a long period," says Weiley. This was partly because the film would have to include celestial phenomena, such as eclipses, that don't occur on demand. "The whole schedule for the shoot was written by

Photos courtesy of Java Films, Cinekinetic and Bob Eather

the sun," he notes.

Even worse, being in the right place at the right time still doesn't mean that a solar phenomenon will be visible. Many times, for example, clouds obliterate the view. "[The sun] is a very difficult star — she very often refuses to come out of her trailer," Weiley notes. "We met people who had chased eclipses around the world and had never seen one."

The director says that making a movie about the sun presents an endless array of photographic nightmares. "It's hard to take a picture of the sun that's any good," he says. In addition, there are questions about flares, such as how many rays of flare the sun should have — a number determined by how many leaves are in the camera's iris. "We concluded that we'd use whatever looked good," Weiley quips. In general, the filmmakers always tried to photograph the sun to its best advantage. Cinematographer Tristan Milani, who shot about half of the movie, says, "We never shot the high sun, but always at sunrise or sunset."

The *Solarmax* crews went to locations all over the world, including Australia, Bolivia, the Canary Islands, Germany, Greenland, Ireland, Peru, Poland, Spain and various sites in the United States, such as Arizona and Alaska. "We went to a lot of places that were key to man's understanding of the sun, spiritually and scientifically," says Tom Cowan, another cinematographer on the movie. "We went to places where there's been a special relationship between people and the sun throughout history."

Because the film was shot intermittently over such a long period, Weiley found it necessary to hire four cinematographers: Coleman, Milani, Cowan and Paul Ree. "Cinematographers have to make a living, and we couldn't afford to keep anybody hanging around for three years," Weiley notes. Eather, who served as producer and scien-



Solarmax features stunning views of Old Sol, captured in a variety of different conditions and from a wide range of locations all over the globe.



tific adviser on *Solarmax*, also contributed a lot of photography, particularly of auroras and eclipses.

Though they are generally referred to as Imax productions (even when not produced by the Imax Corporation itself), large-format films are more accurately described as "15-70" films — i.e., the number of perforations in a frame, followed by the film gauge of the exhibition stock. The film runs sideways through a large-format camera, and the negative size is 10 times larger than that of 35mm. As a result of the image and screen size, the frame fills a viewer's full field of vision, "and the resolution is so good you're almost part of the picture," says Coleman.

The camera equipment

involved in making large-format films creates its own set of challenges, many of them logistical. As Weiley points out, the cameras are enormous. "You could fit a small family in the blimp," he jokes. "You're trying to get next to an anaconda, and you're doing it carrying a refrigerator!"

Though Weiley holds out great hope for the eventual use of smaller, digital cameras in large-format work, he doesn't expect it to occur anytime soon. "The speed of computer chips is the problem," he says. "People tell me what we're talking about won't be feasible until we move into the next generation of computer chips that are not silicon-based."

For *Solarmax*, the crew used rented Imax MSM and Mark II cameras for part of the shoot. The

Top: Australian assistant Robin Tams, left, and South American grip José Luy use a Cinekinetic Maxisaddle (see sidebar on page 90) to tote a camera through the mountainous terrain of Machu Picchu, Peru. Bottom: Bob Eather built the show's large-format camera by adapting a military-surplus camera originally designed to photograph nuclear-bomb blasts. Here, Eather poses with the unit (which was nicknamed "Bruce") in Ise, Japan, at a Shinto shrine to the sun goddess.



main camera, though, was one that Eather had constructed himself by adapting a military-surplus camera originally designed to photograph nuclear-bomb blasts. Eather built the

camera as part of his ongoing quest to photograph aurora. "It's impossible to shoot the aurora well with a conventional Imax camera," he says. "You can't put very fast lenses on

Here Comes the Sun

them. By very fast, I mean an f-stop of 1. The fastest Imax [lens] is about 2.8." The problem, he explains, is that conventional Imax cameras don't have enough flange depth — distance from the lens mount to the film plane — to accommodate the length of a very fast lens.

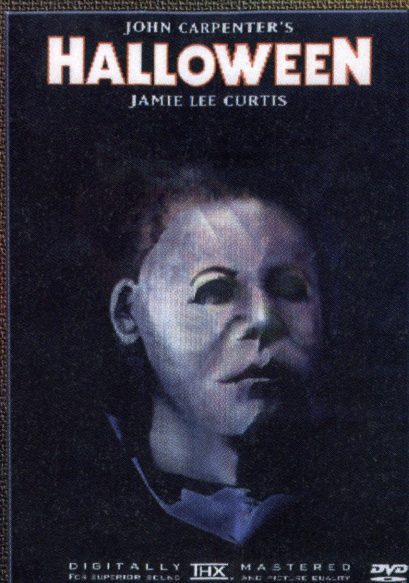
An equally important consideration for Eather was the cost of shooting aurora. "To rent an Imax camera at \$10,000 a week wasn't anything I could afford," he says.

Eather originally built his camera to do time-lapse work, but Weiley pressured him to give it the ability to shoot at 24 frames per second. "That began a terrible two years of my life," says Eather, explaining that mechanically, making a large-format camera run at 24 fps is a nightmare. "In Imax, you have five feet of film going through [the camera] every second."

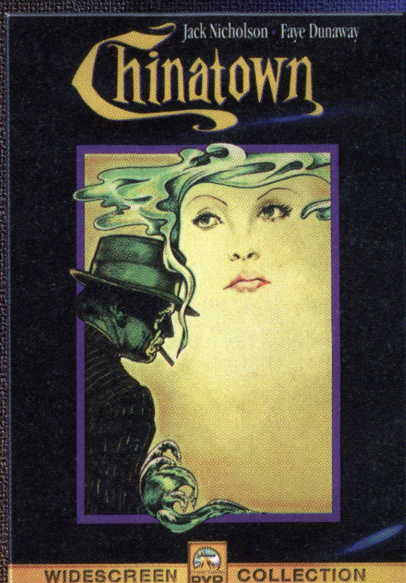
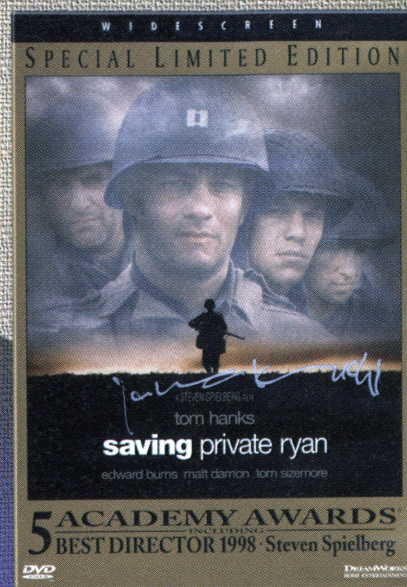
Eventually, he succeeded with his engineering efforts, and the camera will now run at a top speed of 48 fps. "This camera has developed a strong personality," says Weiley. "It's called Bruce." (The name comes from Monty Python's famous sketch "The Bruces," about a group of Australian philosophy professors who are all named Bruce.) Weiley says that although Bruce had a checkered career over the course of the movie, he ultimately turned into a great camera. "Bruce is an instrument, not a tool," says Weiley. "He's a cumbersome thing with more knobs than Inspector Gadget, but you can do marvelous things with him."

Although Bruce, at 75 pounds, is a bit heavier than other Imax cameras, Eather says the extra weight can actually help in terms of steadiness. "We've done a lot of helicopter shots with Bruce — by just setting him on a sandbag and pointing him out [the door]."

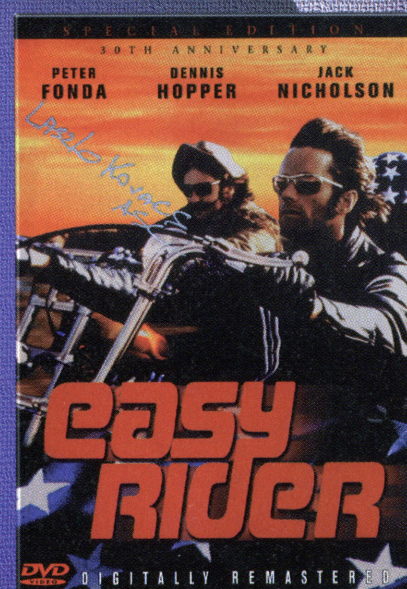
Eather made numerous trips in search of aurora for the film, spending as many as three weeks at a time in places like Fairbanks, Alaska,



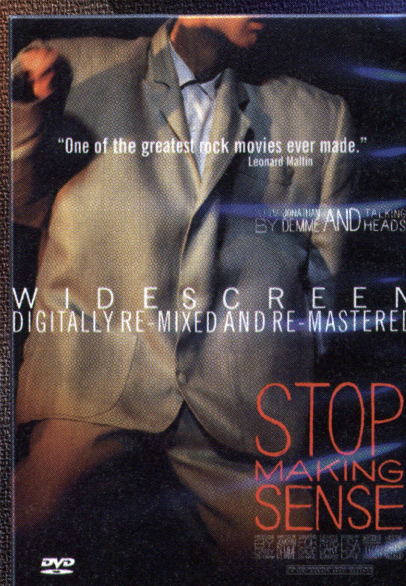
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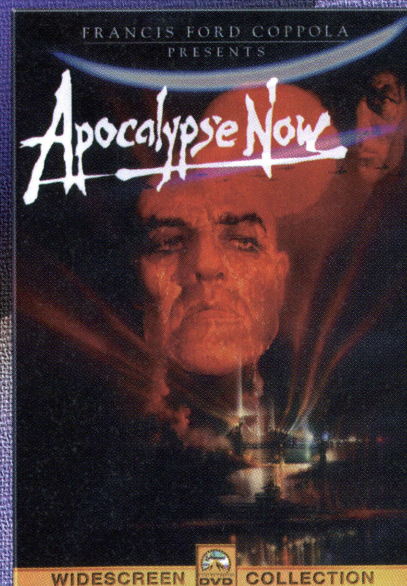
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and staying up all night waiting for the aurora to appear. "Statistically, it's best around midnight," he says. Although some trips were more successful than others, Eather did get footage that captured the aurora as he'd hoped.

Milani says he was particularly inspired by Eather's footage because it showed him how high the standards for photography on the film would have to be. "The auroras are magnificent," he attests. "The world's going to see something quite special." Cowan, who went along with Eather to shoot some of the phenomena, adds, "It's like a bit of magic in the sky."

Eather says that the typical aurora is yellow-green. "When it gets really bright, you can get any color of the spectrum — blues, violets and pinks. After the yellow-green, red is probably the most common color; we got some good reds in there. It's very hard to get the blues. When you see them, they are very fleeting, and color film is nowhere near as sensitive in the blues."

On some of his shoots, Eather used an enormous fisheye lens, about 11" in diameter, that took in the entire horizon. At other times, he shot with a more conventional lens, which he says made his job much harder because it was impossible to predict where the aurora would appear in the sky and whether it would stay there. "The fisheye was a special lens built for scientific applications back in the 1960s," says Eather. "All of the regular lenses I use are [built by Mamiya]."

He says that although Imax cameras traditionally use Hasselblad lenses, he finds the specs on the Mamiyas to be just as good. Furthermore, he says, the Mamiya image area is bigger, meaning that for a large format, they don't have to be used to their very edges the way Hasselblads do. "They're just a better choice in terms of image quality," he says. "They're also about one-third

the price, which is helpful if you're building your own Imax camera."

Eather says that in building his camera, he learned just how precise tolerances had to be. "I'd never built a camera before, so it was a learning process. You have to pay attention to the tiniest details. Anywhere it can go wrong, it will — and did." Through much trial and error, for example, he learned not to use two registration pins across the width of the film. "Now they're along the length of the film. It's better that way; the pins are about 66mm [14 perforations] apart, as opposed to about 50mm."

Large-format cameras use 65mm stock, and in addition to Kodak Vision 800T 5289 emulsion, the *Solarmax* crew used Kodak EXR 5245 and Vision 500T 5279. However, the cameras churn through film quickly — a 1,000' roll lasts just three minutes in a large-format camera. "You have to plan ahead when you're filming a real-time event," says Coleman. "[You have to know] when you can change rolls."

The aspect ratio for large-format is about 4:3, the same as a television image. But shape is about the only similarity between the two formats. "The whole style of composition for television really couldn't be much different than what's required for an Imax presentation," says Weiley. Because documentaries are almost invariably made for television, he adds, a background in conventional documentary work might be the worst possible training for directing an Imax film.

Filmmakers working in a large format have to think about the screen in a whole new way. "The word 'frame,' which we use so naturally, doesn't fit," says Weiley. "It's ovoid, wider at the bottom. It's exactly your field of view. If you look in front of you and de-focus your eyes, what you're seeing is an Imax frame."

Coleman adds that a large-format image has a very different

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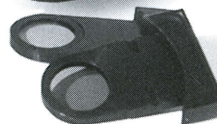
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Sun worshippers gather for Intiraymi, a Peruvian solstice celebration that takes place above Cuzco, near Machu Picchu.



sweet spot than television's, explaining that "the audience generally focuses one-quarter to one-third of the way up the frame [while watching a large-format film]." As a result, large-format images tend to show a

lot of sky. "It's a challenge to not have the sky too bright. I tend to use graduated filters a lot. I like to see definition in the sky." He uses mostly neutral-density filters, all the way to ND9, with subtle colors. "Generally,

you're dealing with landscapes, and I don't like to over-enhance colors."

Coleman says he also tries not to put things at the top of the frame, so that viewers won't have to crane their necks. He adds that the cinematographer must also be mindful of editing: "You don't want the viewer looking at the left of frame in one shot, then at the right of frame at the start of the next. You have to foresee how shots might come together."

Though many of today's large-format films are shot in 3-D, *Solarmax* was not. "Personally, I prefer to shoot in 2-D," says Coleman. "If you use 2-D properly, you can give the impression of 3-D. If you move the camera past objects, you give depth in the frame. Because the Imax film is filling your whole field of view, your eye is tricked."

According to Weiley, the most essential quality of an Imax film is that it be absolutely theatrical. He

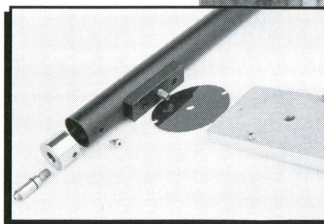
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notes, "It's visceral rather than intellectual; it's about exploring for the audience the experience of being there. You're taking that row of seats out and holding it up under Niagara Falls, or something like that. It's operating in a very physical way."

The director maintains that too many large-format films don't take this into account, and as a result, they ignore the real possibilities of the medium. Indeed, some filmmakers try to impose a storyline on their large-format films, something Weiley thinks is doomed to failure. "You can't get away with suspension of disbelief," he says. "You can't have it both ways — [tapping] the power of all that realism and then faking it."

Certain things that wouldn't cause a second thought in conventional cinema become impossible in a large format. "You can't put things at the side of the screen," says Weiley. "Half the theaters have domed

screens. If you put a pole or tree at the edge, it turns into a banana. And if you pan, the banana wriggles." He adds that panning is generally ill-advised in large-format films: "You might as well not have a pan handle." In fact, any sort of radical movement is very hard on a large-format audience. "They can't follow the frame," says Coleman. "You're so much a part of the frame that if the camera is radically moving, the viewer becomes [ill]."

Of course, large-format filmmakers have a few tricks of their own. "It's nice to put a number of elements within the frame, so the viewer has the chance to discover things within the shot that he didn't see at first," says Coleman. This demands a lot of depth of field. "I try to stop down to 16, much more than I would normally. I give the viewer opportunities to look at more." The depth is also important

because movement in the frame works best going toward or away from the camera, rather than from side to side. "If things cross the frame, you do have problems with strobing," he says.

The pacing of shots is also very different with a large format. "It's totally the opposite of television — you want to give viewers the opportunity to take it all in, rather than bombard them with images," Coleman advises.

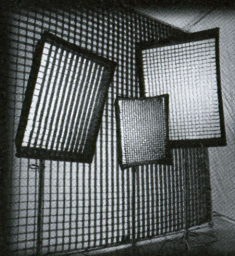
Some of the most important shots in *Solarmax* were not photographed by any of the cinematographers. Weiley was able to take advantage of spectacular footage of the sun taken from satellites in orbit around Earth. "If there was one reason the film went ahead, it was because of SOHO, a new European satellite launched by NASA," says Weiley. "It has a telescope observing the sun 24 hours a

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day, 365 days a year.”

Though that camera's output is ordinarily divided into four smaller images, Weiley convinced the scientists to do a 7-second test of a full-screen image. He then had the image transferred to high-definition video by Imagica USA, an effects

company that specializes in large-format work. “The people on the experiment were really knocked out and happy with what happened,” says Weiley. “We were able to talk them into running the camera at full resolution for a full solar revolution, which takes place in about a month.”

BACK IN THE CINESADDLE



Filmmakers often have to commission special equipment to meet the needs of particular sequences. In the case of *Solarmax*, cinematographer Peter Coleman had to find a fast way to set up the support for a large-format camera. He found it with a custom-made, extra-large version of the Cinesaddle, a camera mount made by the Australian company Cinekinetic.

“It’s basically a sophisticated beanbag. It supports the camera and holds it steady,” says Coleman, who had used Cinesaddles before with smaller cameras. “I own a Cinesaddle. I shoot a lot of 16mm, and I use it extensively.”

Coleman’s main problem on *Solarmax* was that he needed to shoot a Peruvian sun festival called Intiraymi, which takes place above Cuzco, near Machu Picchu. “Intiraymi celebrates the solstice. It’s a chaotic, colorful event that

required us to move rather quickly, which is obviously very difficult with a large-format camera,” the cinematographer says. “We were shooting a parade in real time, and we had to be mobile and really quick. We had to be on foot, because the streets were packed with people. We wanted to keep the camera low, and we couldn’t afford to waste time.”

Coleman contacted Cinekinetic’s Mike Young and explained what he needed. “Through a series of conversations, we came up with a design. Mike developed [a special version of the Cinesaddle] specifically for this shoot in Peru,” he discloses.

Coleman’s first encounter with the Cinesaddle he had commissioned gave him a bit of a shock. “The 16mm Cinesaddle is about the size of a football,” he says. Although he knew the large-format Cinesaddle would have to be bigger, Coleman didn’t realize just *how* much bigger. “When it arrived, I opened my door to find a box the size of a refrigerator!” he exclaims.

The Cinesaddle inside turned out to be about the size of a large armchair. “The Cinesaddle has to be large enough to support the camera on the sides as well as underneath,” he notes. “The sides will rise up and envelop the camera to hold it in place. It had to be at least twice the size of the Imax camera itself.”

Fortunately, though, the device was still relatively lightweight. “It’s just made of canvas with polystyrene balls, and it can be carried by one person.” Most importantly, the Cinesaddle gave Coleman the speed and flexibility he needed to do the shots in Peru. “It immediately settled enough to hold a steady shot,” he attests.

— Stephanie Argy

With a digital receiver of more than 1,000,000 pixels, the SOHO satellite offers a space-based image of the sun at a resolution never before available. In addition to the SOHO images, Weiley was able to get two weeks’ worth of footage from a Lockheed satellite that focuses on the sun with a longer lens. “It looks like the deepest pit of hell,” says Weiley.

As spectacular as they were, the images from the satellites needed to be digitally enhanced and composited into other shots. Imagica worked on about 50 shots in the movie, manipulating many of them digitally and others optically. Chris Reyna, president of Imagica, notes that dealing with data from the scientific community is surprisingly difficult. “They don’t think about data the same way that show business does,” he says. “There was quite a bit of time spent learning how to talk to each other. The ironic thing is that, as filmmakers, we’re often in the position of telling scientists that their images aren’t good enough.”

Reyna explains that while authenticity and accuracy are important, filmmakers also have to find a way to make the images compelling enough to watch on screen. “Everybody remembers what those painfully dreadful science films were like in high school,” he reflects.

In some cases, the resolution of images was not sufficient, so the data had to be re-created, pixel by pixel. “Large format is extremely demanding in that regard,” says Reyna. “It’s fun, though, because we’re seeing things we haven’t seen before — images of the sun and how it interacts not only with the Earth but with the whole solar system.”

Cowan agrees that the images are amazing. “It’s worth going to see the movie just for those shots — extraordinary images of this pulsating energy ball. The images are not only extremely powerful and rather frightening, but also rather delicate and crystalline.” ■

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Bird's-Eye View

AC explores the field of aerial photography by surveying some of the modern firms that have advanced the craft.

by David Wiener

In October of 1858, Gaspard Felix Tournachon (also known as “Nadar”) made an 80-meter balloon ascent just outside Paris.

Although he was hardly the first to fly a coal-gas balloon over France, Nadar was the first to take a camera and a complete darkroom along with him. He returned to earth with what he described as “a simple positive on glass” made with “detestable materials” — apparently, Nadar was no fan of the wet-plate process. His picture

of the valley of Bievre, seen from an altitude of approximately 260 feet, was the world’s first aerial photograph.

A craze for bird’s-eye views followed, as amateur tinkerers and professional engineers came up with new ideas. As early as 1863, a letter to London’s *Daily Telegraph* suggested that aerial cameras would provide sharper images if they were mounted on a gyroscope. (It was a great idea, but way ahead of its time; in the

1860s, stabilizing gyroscopes were far too big to take up in a balloon.)

In 1889, cameras were attached to kites (called “captive airships”), and in 1891, a German patent was issued for a gunpowder rocket-camera, which made exposures at 2,600 feet. In 1903, the “pigeon-camera” was patented. It was strapped to the bird’s chest, weighed just 2 ½ ounces and produced a 1 ½” square negative. One lovely picture taken by such a camera shows a castle far below, nestled in rolling countryside. Along the right-hand edge, the sunlit feathers of the pigeon’s wing can be clearly seen.

After pioneers like Nadar came businessmen and merchants who tried to make a living from aerial photography. A Frenchman named Auguste Gomes offered his line of



Photos courtesy of Copterworks, Coptervision, Flying-Cam, Tyler Camera, Wescam, Spacecam, Flying Pictures, Photo-Sonics, Aerial Cinema Productions and Production Helicopters.

kite-cameras to the public in 1910. They ranged from the affordable Jumelle Populaire to the waterproof and “non-deformable” Wenz-Hermagis, made entirely from the wonder metal aluminum.

The first aerial movie was probably taken by the Pathé company’s L.P. Bonvillain from a Wright airplane near Le Mans, France, in 1908. Audiences couldn’t get enough of airborne sequences, and in 1927, *Wings* (photographed by Harry Perry, ASC, who used the classic Akeley camera for most of the airplane work) won the Academy Award for best picture. Hollywood’s need for more and better footage from the air has attracted many entrepreneurs willing to try their skills in the competitive world of aerial cinematography. Although it isn’t possible to cover all of the firms currently working in this field, we hope this article will provide a general overview.

Remote-control helicopters

Whether it’s a balloon, kite, plane, helicopter or company, the hardest part about aerial photography is just getting off the ground. “I have to admit, it’s real tough to get into this business,” says Garnik Ghaloostian of Copterworks in Glendale, California, “but we provide a very good product. We started out at the beginning of 1997 renting out Jimmy Jib camera booms, a lightweight remote-camera boom used on lots of TV shows. Shortly afterward, we started getting into miniature, remote-control camera helicopters. For more than four years, I’ve been developing and perfecting our camera helicopter systems. These machines are not available as kits, and there is very little out there to be used for reference. Fewer than 10 percent of the components are off the shelf, and the rest need to be designed and manufactured from scratch. We had to manufacture the drive systems for

the helicopter, the camera mount and the camera, and make the systems work smoothly together.

“Although feature films generally prefer to go with full-size helicopter camera platforms, miniature remote-control helicopter cameras provide an attractive alternative in certain situations,” he continues. “First, if the production budget is limited [because miniature helicopters are less expensive to use]; second, if the camera has to go through cramped, tight spaces [such as tunnels or caves] and get close to the subject; third, if the downwash from the blades has to be minimal [because miniature camera helicopters generally have a blade span of less than six feet]; and finally, if lightweight equipment and fast setup and breakdown are necessary. We provide a camera package that includes a helicopter and camera, a camera operator, a pilot, and a coordinator.”

Copterworks has completed several small projects, and Ghaloostian says he hopes to land work with TV or feature productions. “I think most of our clients will come from the commercial section of the industry, as well as some feature projects. At the present time, Copterworks can shoot in 16mm or 35mm using a three-axis, gyroscopically stabilized mount attached to the front of the helicopter. Our video downlink is currently used for monitoring purposes only, but if we get enough calls for it, we’ll start to

provide digital video as well.”

Coptervision of Van Nuys, California, also specializes in miniature remote-control helicopter cameras. The business, run by Carlos Hoyos, Sarita Spiwak and Daniela Meltzer, began operating in 1997. Hoyos had been a cinematographer, director and producer in Colombia and says he was always fascinated by radio-controlled model-helicopter cameras. Four years ago, he moved to Los Angeles and joined a group of model-helicopter enthusiasts meeting in a public park; shortly thereafter, he bought his own machine. Not long after that, he asked Spiwak to join him in his new venture.

“We bought a second helicopter and saw that the technology was 15 years old,” Spiwak recalls, “so we worked on developing our own helicopters and designing our own equipment. Three years ago, my daughter, Daniela, joined us as a partner, and we’re now on our fourth generation of helicopter camera systems: the CVG-2002, totally designed by us. It’s more compact and lighter than our previous models, and it’s gyrostabilized and has three axes of movement, including 360-degree roll, 120-degree tilt and 180-degree pan.”

The Coptervision camera system can accommodate a variety of 35mm and 16mm film formats, as well as DV. “We make the cameras to our specifications,” Spiwak says. “The 35mm camera is modified from an

Opposite: Copterworks of Glendale, California, can shoot both 16mm and 35mm film using three-axis, gyroscopically stabilized mounts on the firm’s remote-controlled helicopters. **Above:** The camera system from Coptervision can accommodate many 16mm and 35mm formats, as well as digital video. Their new Rollvision system can also be mounted on a variety of platforms, including insert cars, Steadicams, cranes and tripods.



Bird's-Eye View

Belgium-based Flying-Cam, Inc. offers a remote-controlled helicopter camera system with a mount that provides 360-degree pans and 190-degree tilts.



Arri IIC with a 200-foot film load and weighs 10 pounds.”

The standard equipment and crew for a location miniature helicopter camera shoot are two aircraft (one for backup), two cameras and three operators: the helicopter pilot, the camera operator, and a telecommunications operator who handles the video assist and maintains the quality of the ground-monitor image. There are usually two monitors, one for the camera operator and another for the director and producer.

“We just finished a shoot on the last show this season of *Charmed*,” Spiwak says. “One of the witches started flying, and we did a POV shot of what she sees; we also did some shots flying between trees and under bridges. They were very happy with the footage.

“In addition to the CVG 2002, we are patenting a new camera system called Rollvision. It does everything our other camera system does, but it has applications far beyond miniature helicopters. Rollvision can be mounted on an insert car, a Steadicam, a crane, jib-arm, a tripod or whatever.”

The concept of providing a miniature remote-control helicopter camera platform to the entertainment industry was first made commercially practical in 1988, when Emmanuel Previnaire founded Flying-Cam, Inc., in Liege, Belgium. The demand for Flying-Cam’s services led to the 1994 opening of an additional office in Santa Monica, California. The company’s breakthrough moment came on July 11, 1989, when Previnaire’s Flying-Cam

I participated in the bicentennial commemoration of the French Revolution by flying down the Champs-Élysées from the Obelisque to the Arc de Triomphe, marking the first broadcast using this type of aerial technology.

Continued innovation brought about Flying-Cam II, which has a patented, gyrostabilized camera mount providing unlimited 360-degree pans and rolls and 190-degree tilts. On a standard job, Flying-Cam provides two helicopters and cameras as well as a pilot, camera operator and technical assistant. Video assist provides each project’s cinematographer and director with the ability to choreograph their shots with the Flying-Cam crew while filming in 35mm, Super 35, 16mm, Super 16 and video formats; the company’s latest development is its EFP DV helicopter camera system.

“Emmanuel Previnaire won an Academy Award for technical achievement for pioneering this technology,” says Alma Castro, Flying-Cam’s office manager. “But beyond Flying-Cam’s efforts to have the most innovative technology, we strive to have our professional crews work closely with our clients to deliver top-quality sequences in the safest manner possible. We are involved in commercials, documentaries, live broadcasts and music videos.”

The company’s feature work has included *The Beach*, *Tomorrow Never Dies*, *The World Is Not Enough*, *Mission: Impossible 2* and *The Legend of Bagger Vance*. Notes Castro, “On *M:I-2*, we were originally hired for two or three days, but when director John Woo saw how quickly our crew

could set up — 10 to 15 minutes — and the versatility of the helicopter, the production brought our crew to Australia for about a month to shoot additional action sequences.”

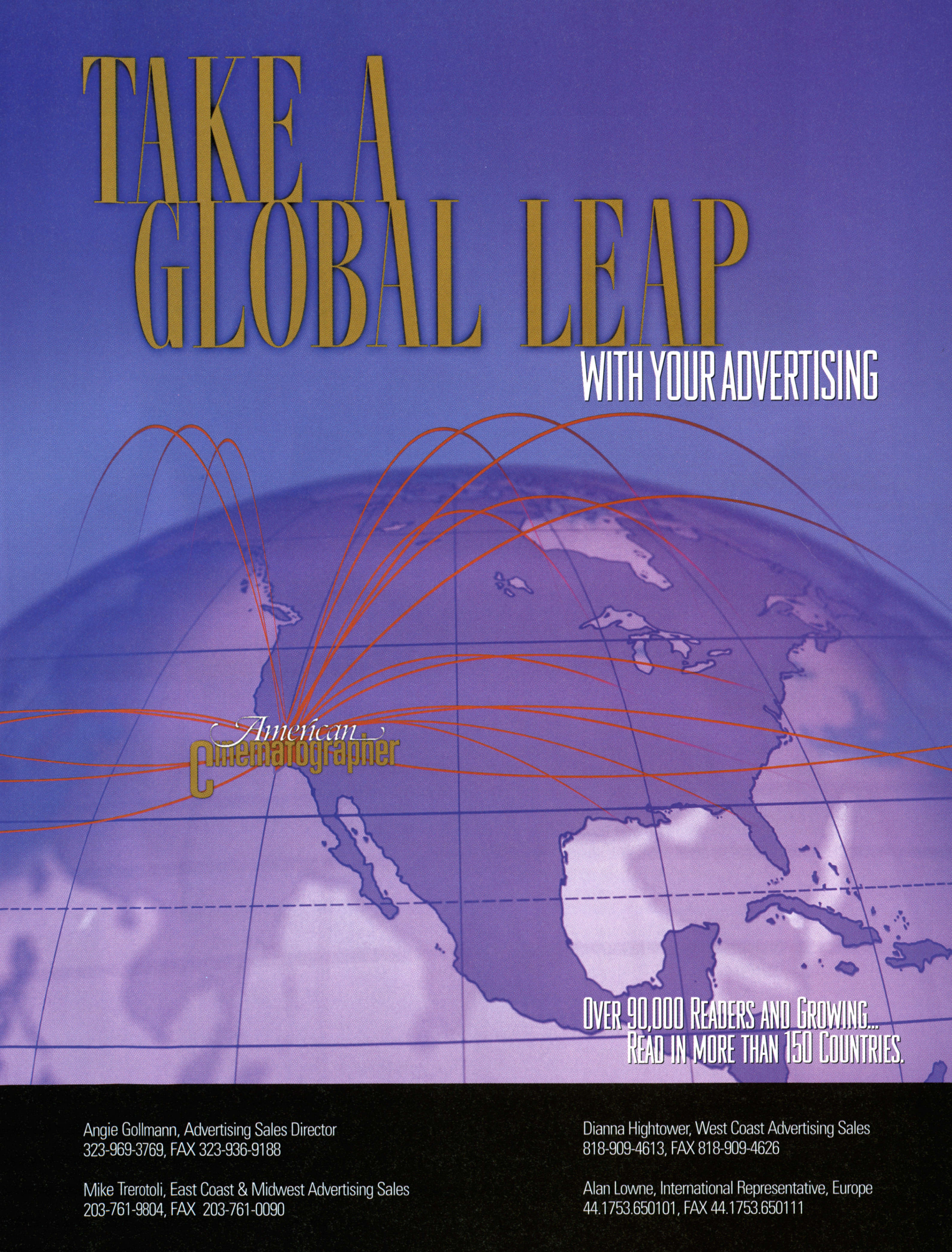
Full-size aerial camera systems

Although miniature remote-control helicopter cameras are being used on more and more feature films, most producers and directors rely on the full-size variety. The first firm to provide camera mounts for standard helicopters was Tyler Camera Systems of Van Nuys, and the company has been honored more than once by AMPAS for technical achievement. “I made my first helicopter camera mount back in the 1960s in my garage,” says Nelson Tyler, founder of the company. “It was a combined seat-and-mount placed in a helicopter’s side door. Just about any camera could be operated normally, with the cameraman looking right through the viewfinder, making it possible to get very tight shots. You are not looking at a video monitor or doing anything by remote control. You have direct, hands-on control of the camera and all of its features, such as zoom, focus and so on.”

For most of the company’s existence, the mounts were not gyroscopically stabilized. “There was no need,” Tyler says. “I relied on counterbalances that inertially stabilized everything in five axes. About seven or eight years ago, we added gyrostabilization to make our products easier to use for less experienced aerial camera operators. The military first started adding gyros to our mounts when they did hovering shots at high altitudes with long lenses looking down on nuclear detonations. That provided a very solid image, so we started offering gyros as an option. But back in the early years, there were no gyros. One of the first things I did that most people remember was the aerial shot

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Bird's-Eye View



Above: Tyler Camera Systems offers an arsenal of specialized camera mounts that can hold cameras of any size, all the way up to VistaVision and Imax 3-D units.

Below right: Wescam's first fixed-wing camera system, the Stealth, is designed for the broadcast video market and can provide aerial coverage of events without creating the noise that usually accompanies helicopters.

of Barbra Streisand singing on the tugboat in *Funny Girl*; I did that with a Panavision anamorphic 50-500mm zoom lens."

After his first year of operation, Tyler built a second mount. One day he let another cameraman rent it and soon realized that he was onto something. "When I got a check for a job I hadn't shot myself, I thought, 'Ah, wait a minute!'" Tyler Camera Systems was suddenly in the rental business. "We now have mounts at close to 40 camera-equipment rental houses, and we split the rental fee with them. That gives lots of local people the option of doing a helicopter shot without waiting for a mount to be shipped to them."

Tyler's bread-and-butter items are the Middle Mount and Major Mount (used extensively for the aerial scenes in *Apocalypse Now*). These have been joined by the Nose Mount, which attaches to the underside of a helicopter and is remotely operated from inside the aircraft. "We have larger Super Nose Mounts that can hold several cameras," Tyler says. "We had three VistaVision cameras on our biggest Nose Mount for *M:I-2*, and a similar arrangement for two Imax cameras operating side by side for large-format 3-D cinematography. The record might have been a custom-built camera mount that held nine Arriflex 435 cameras slung on a cable beneath a helicopter

and specially stabilized with gyros."

Tyler said his company offers about 150 Middle Mounts, 10 Major Mounts, 20 Super Nose Mounts and 80 regular Nose Mounts, as well as a newer product, the remotely operated FSI Gimbal. "It's a broadcast video camera inside an actively gyrostabilized ball mount on the outside of a helicopter," he details. "Another new product is our remotely operated gyrostabilized Gyromount, which can go onto cranes, helicopters, camera cars or boats. For *U-571*, it was used right down on the water to film submarines on the surface. But the vast majority of our business is and always has been filming from full-size helicopters."

Wescam, which has locations in Van Nuys, New York, Florida and Canada, has been in business for more than 25 years and was the first company to dedicate itself entirely to gyrostabilized, remotely-operated, full-size-helicopter camera systems. The Wescam unit is a large ball with a camera inside, attached to the front or side of a helicopter. It was invented by Noxon Leavitt, who won an Academy Award for his creation in 1990.

"Because most of our technology is based on military specifications, our standards for reliability and performance are very high," says Susan Hodgkins, director of marketing for Wescam's entertainment

group. "We still have military and government customers, as well as news-gathering organizations and, of course, our entertainment division, which handles broadcast sports, feature films, music videos, documentaries and commercials."

"In addition to helicopters, we can mount Wescams onto almost anything that moves," she continues. "Recently, we shot the closing scenes for a feature called *Pay It Forward*. A Wescam film system was attached to our Long-Line Mount, a battery-operated anti-torque device. This assembly hung off a cable attached to a telescoping construction crane. The camera was panned and rolled while the crane lifted it from four feet to 200 feet, a sort of Hitchcock-type spinning shot. The wind was blowing, but the image was completely stable."

"Our newest product for feature work is the Wescam XR [Extreme Revolution], which is a stabilized, three-axis, wireless remote head. It rotates 360 degrees on all three axes, and most film or video cameras [weighing] up to 150 pounds can be installed. Wescam also provides HD, digital and analog video systems, which are mostly used for broadcast sports."

Hodgkins says that sports producers have been very happy with another new Wescam product, the Stealth. "The Stealth is the first fixed-wing camera system we have



CAMERA MOVEMENTS

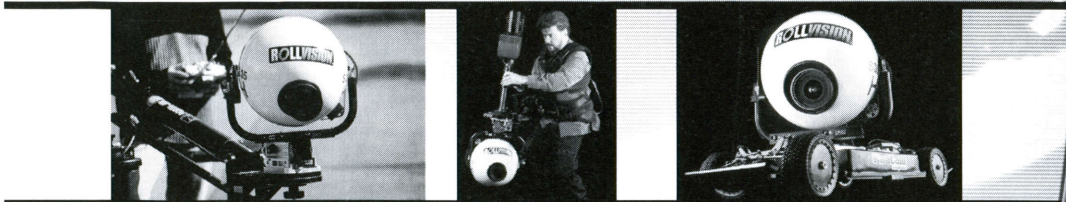
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Bird's-Eye View

SpaceCam's exclusive Quick Side Mount allows its gyrostabilized camera system to be rapidly changed over from the nose to side position.

developed for the broadcast market. It was created to provide aerial video of any event, especially where noise is a concern; the Stealth is virtually silent as it passes over sports venues, even at low altitude. It's perfect for golf or equestrian competitions, because those events can't have helicopter noise."

Wescam worked with Diamond Aircraft to integrate a complete aerial video system into a single-engine, fixed-wing composite aircraft. "It can stay up for a maximum of six hours without re-fueling, and you can trailer it around," Hodgkins says. The package comes with the aircraft, the pilot, the Wescam operator, the Wescam Model 16 video system mounted on the wing, a live microwave downlink and a digital recorder.

Hodgkins notes that the Stealth is also ideal for ski events. "During the last Goodwill Games, there were about 20 microphones set up along the downhill course that were able to capture the sounds of skis cutting through the snow because of the silent operation of the Stealth. With a helicopter, that wouldn't have been possible."

A modified version of the Wescam came on the scene in 1989. Designed by aerial cinematographer Ron Goodman, SpaceCam is a remotely operated gyrostabilized camera system that can mount onto full-size helicopters and a variety of cable rigs, cranes, camera cars and boats. According to Goodman, whose design for the system was recognized in 1995 with an AMPAS plaque for scientific and engineering achievement, it is the versatility of the SpaceCam that provides the greatest advantages for filmmakers.

"Directors today want more than just conventional aerial photography — they want something unique on the screen," says Goodman, who has been shooting aerials for more than 30 years. "With helicopter shooting, our ability to

mount the camera on the nose, the tail, the side or any combination at the same time provides many creative options. The Nose Mount is especially effective, as it allows for faster flight speeds in aerial filming. *Con Air* and *Twister* are prime examples of directors using aerials in an exciting way. On *Rules of Engagement*, the director's use of aerial shots of the military helicopters in the embassy scenes was very effective, and in *The Thomas Crown Affair*, the aerial sequences of the gliders and catamarans with Pierce Brosnan helped make that story exciting."

For *M:I-2*, SpaceCam pilot Peter McKernan, Sr., aerial cinematographer Phil Pastuhov and visual effects supervisor Richard Yuricich, ASC traveled to Lone Pine, California, to shoot plates of Mt. Whitney that were used in the film's opening airplane-crash sequence. The SpaceCam was also used extensively to capture many other spectacular scenes set in locations that included Azusa, California; Moab, Utah; Sydney, Australia; and the Australian Outback. "The production kept the aerial unit on location

for the majority of the shoot, which allowed us to contribute our viewpoint at any time," Pastuhov recalls.

SpaceCam's other applications, such as a descender cable rig system, have been used recently with visual effects to create some unique shots. On *Inspector Gadget*, the camera system was dropped straight down from a 600' building for a sequence involving a falling Matthew Broderick.

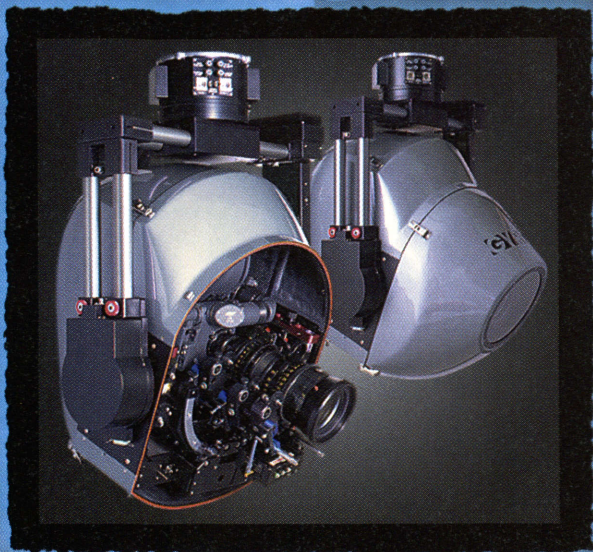
A variety of camera options are offered by the company. In addition to a 35mm 4-perf camera, there is the in-house 35mm 8-perf VistaVision unit and a 65mm 5-perf camera; the system is also compatible with HDTV camcorders and the 65mm 15-perf Imax format. "We've developed a strong position in the Imax world," notes Goodman. "Stability is extra-critical when projecting onto that big screen, and we've been able to consistently provide that stability."

Among SpaceCam's large-format credits are *Everest*, *Africa's Elephant Kingdom*, *Fantasia 2000*, *Dolphins*, *Wild California* and *The Endurance*. For *The Endurance*, which tells the story of Sir Ernest



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Bird's-Eye View

Shackleton's 1914 Antarctic voyage, Goodman and the SpaceCam spent six weeks traveling and shooting in Antarctica. "Those conditions provided the ultimate test for our system, and the results were very good," he says.

To give SpaceCam HD video capabilities, Goodman approached Plus-8 Video of Burbank, California, a camera-rental house. Before Sony came out with an HDTV camcorder, the HD camera and its bulky recorder were separate pieces of equipment, making it very difficult to use in an enclosed, remotely operated ball-style mount. Now, HD camcorders can fit into many mounts like the SpaceCam. HD video is an attractive option when film is too expensive, and it is often used for industrial projects and documentaries.

"Ron Goodman approached us about two years ago," says

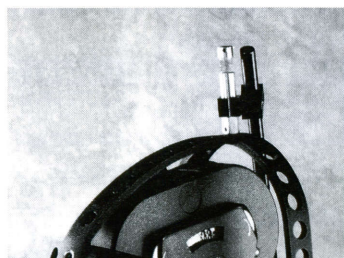
Christian Nightingale, Plus-8 Video's vice president of marketing. "He wanted to put an HD camcorder into the SpaceCam and offer the HD option to customers. Because we rent lots of HD equipment, it sounded like a good match. At that time, we were working with the Sony HDW-700A, the first real HD video camera and recorder combined into a single unit. When KCTS in Seattle did its series of HD *Above* aerial profiles of states, they had to stuff the recorder into the helicopter cockpit. Things had changed."

SpaceCam sat down with Plus-8's chief engineer and went through several days of discussions, working to develop a way to marry the HDW-700A with Goodman's SpaceCam mount. "There was a lot of testing," Nightingale says. "We helped them with the specs of the camcorder and the ergonomics, and answered any questions. The work

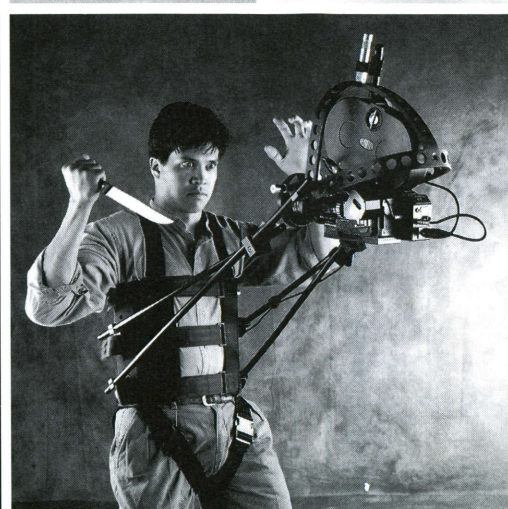
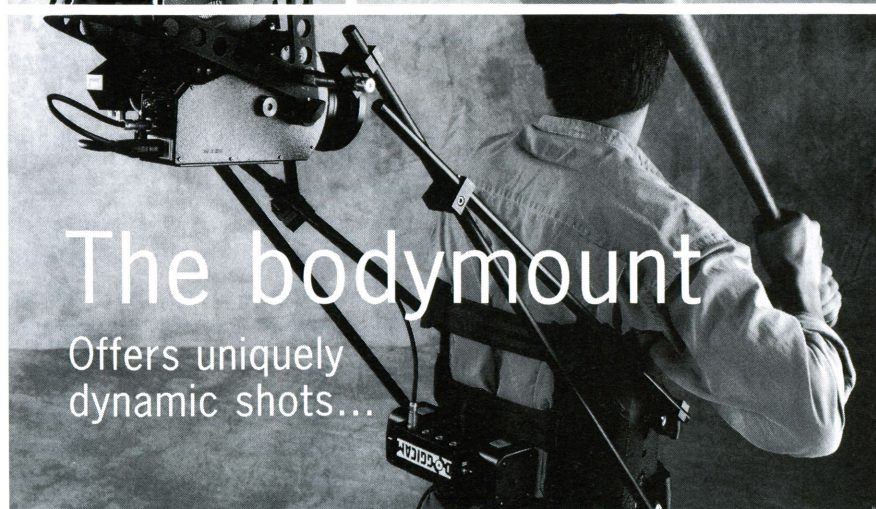
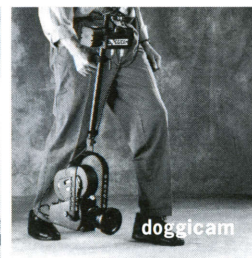
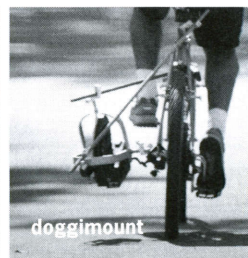
took about a month; ideas were tried out and then modifications would be made. One of the hardest things was dealing with the data-transfer to control the camera movements, the iris and things like that. When it was all finished, the HD SpaceCam was mounted onto the nose of an A Star helicopter and tested on a flight over Los Angeles. It looked great."

The first customer for an HD camcorder in a SpaceCam was Argentina's millennium TV spectacular. "Plus-8 provided the HDW 700A camcorder, a wide-angle Fujinon zoom lens, a Sony 9-inch HD monitor and a Sony 14-inch high-resolution HD monitor," Nightingale remembers. "They flew this system all over South America and shot down there for about two weeks; it came out very well."

Flying Pictures, USA, located in Van Nuys, began operating about five years ago. It is the sole outlet for



Bodymount uses a specially designed vest and the standard doggimount bracketry to allow easy and comfortable attachment of the camera to a person. This system offers uniquely dynamic shots. The vest can be covered with wardrobe to allow framing to the middle of the chest.



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the Gyrosphere, a remotely controlled, gyrostabilized camera system that was first brought to the United States in 1984. Flying Pictures now has two Gyrospheres available to the motion-picture and video industries. Although the system's primary use is on helicopters, it can be mounted on a variety of platforms, including cranes, boats, camera cars and even a descender rig. It was the first stabilized ball mount to be used on a descender rig (for Steven Spielberg's *Hook*).

On helicopters equipped with a special set of brackets designed by Flying Pictures, the Gyrosphere ball can be mounted on the nose of a Eurocopter Twin Star or, within minutes, be moved to the side position. In this setup, it has seen action on *The Perfect Storm*, *Message in a Bottle* and *Outbreak*, among other features. It was also used on a specially designed, 500'-long cable



The Gyrosphere, from Flying Pictures, USA, is shown mounted on the tail of a B-25 bomber photo plane.

system for *Wild, Wild West* to simulate the POV of Dr. Loveless's giant bug creature.

The company's main business is renting the Gyrosphere and supporting top aerial cinematographers, one of whom is Michael Kelem, who also serves as president

of the company. "I've been in the business for more than 10 years," Kelem says. "Our philosophy is to send out the most reliable piece of equipment to aerial cameramen with a lot of experience. That way, Flying Pictures can support not only [cinematographers], but also produc-



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Bird's-Eye View



Photo-Sonics, Inc. of Burbank, a firm noted for its rugged high-speed cameras, has had cameras mounted on a number of different airplanes. Here, a unit is fixed to the wing of an F-86 Sabrejet for shooting on the epic feature *Pearl Harbor*, to be released in 2001.

tions, with excellent personnel and backup. We're always adding new features, such as faster, stronger gyros and more digital options."

The Gyrosphere has four gyroscopes (yaw, pitch, roll and one for horizon leveling) and a Mitchell Mark II 35mm 4-perf camera, and uses either a Cooke MK II lens or an Angenieux HR 25-250mm zoom. For most sequences, the Mitchell with the 10:1 zoom is used, but a VistaVision camera and prime lenses are generally substituted for visual-effects work. "VistaVision and the Gyrosphere make a good combination for doing effects shots and backgrounds," Kelem says. "We did a lot of work on *Rocky and Bullwinkle*, a big visual-effects show that required the use of both Gyrospheres. Sometimes, one would be on the East Coast while the other was shooting on the West Coast. At one point they were both at the same location, with me shooting on a camera car while the aerial cinematographer, David Nowell, was shooting from a helicopter.

"We had to have a very stable camera platform for these background-plate shots, because they were going to add a lot of CGI characters to those scenes during post-production," he continues. "For instance, there are shots where Bullwinkle flies a vintage plane through Washington, D.C. We filmed the plane with the pilot wearing a green suit, and Bullwinkle was later

substituted for the green pilot. Because Flying Pictures does aerial coordinating, we're able to offer the complete package — work, equipment and personnel."

Pearl Harbor is Flying Pictures' most recent high-profile job. Nowell, an aerial cinematographer with more than 27 years in the business, worked as director/cameraman on the epic film's aerial unit. "Aerial work was obviously a very a big deal on that production," Nowell says. "I had a crew of four doing camerawork, along with 14 pilots and a backup crew of six mechanics. The Gyrosphere was my prime camera platform. Most of the time, it was mounted on the nose of a Twin Star helicopter, but sometimes, with the use of a custom-built bracket, it was hung on the tail of a B-25 bomber. This setup allowed us to get some amazing footage of the Japanese armada heading toward the island of Oahu.

"Although the B-25 came over as a camera platform, we painted it up to look like one of the Doolittle Raid B-25s and shot some scenes for that sequence," he continues. "We also mounted cameras on the tails and wings of various airplanes. Tyler Camera Systems sent over some of its camera systems, including some built especially for this show. On one, we put two .30-caliber machine guns with a Photo-Sonics 4ML camera mounted between the barrels. With

this setup on the front of the Twin Star helicopter, we could fly, run the camera and fire the machine guns, giving us a POV of a Japanese Zero strafing the airfield."

Photo-Sonics, Inc. of Burbank is perhaps the oldest company currently involved with aerial motion-picture cameras. The firm was founded around 1928 as Acme Tool & Die, making registration pins and replacement movements for the Bell & Howell 2709 cameras used by Walt Disney. Soon after that, they began manufacturing the Acme Camera as a complete replacement for the Bell & Howells used by Disney. The camera became an integral component of the Acme-Dunn optical and contact printers. In the early 1940s, the company was given an honorable mention by the AMPAS for its contribution to the Acme-Dunn Optical Printer, and in 1980, the honor was upgraded to an Academy Award for scientific and technical achievement.

Conrad Kiel, the company's rental manager, relates, "Around 1965, Fox Studios purchased one of our 360 fps, pin-registered 4E cameras to photograph miniatures on *Tora! Tora! Tora!* Several years later, the camera was sold to a Hollywood rental house that provided it to customers as a special-effects camera for commercials and motion pictures. In the years that followed, we received many calls for additional cameras. We began building cameras specifically for the motion-picture industry and formed a small rental department. The 4E camera became the 4ER when it was reflexed in 1984. The 4ER earned the company an AMPAS award in 1989. Over the years, we've built many 4ER [pin-registered] and 4C [rotary prism] cameras specifically for the film industry."

Both the 4ER and the 4C are large, 35mm cameras that are not typically used for aerial filming because of their size, weight and AC



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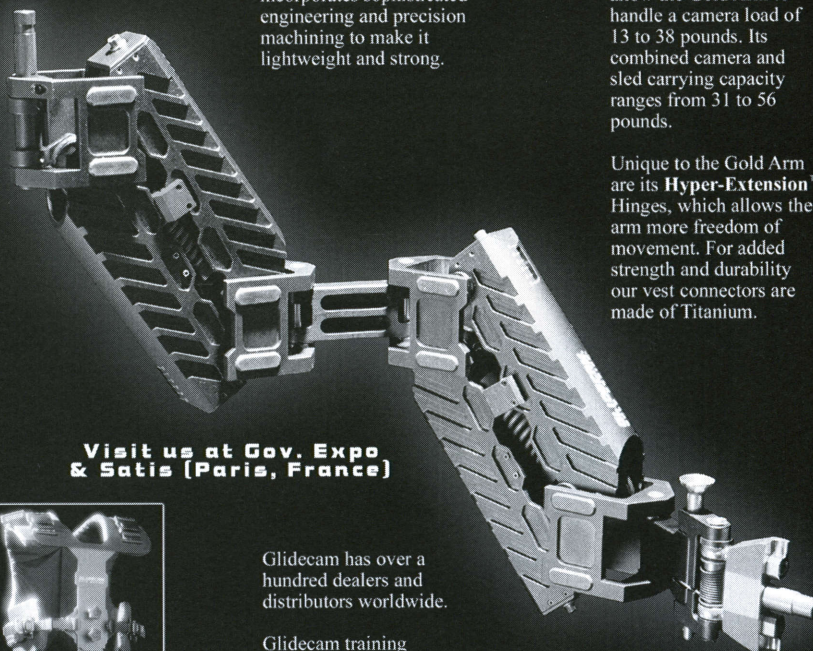
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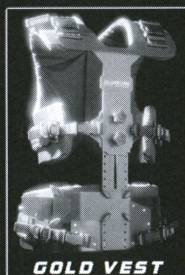


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Bird's-Eye View

power requirements. "The 4ML camera was designed in 1969 as a compact, 28-volt, pin-registered, 35mm camera capable of running from 10 to 200 frames per second," Kiel says. "It was used in *The Final Countdown* as a belly-mounted camera on an F-14. Although the camera had been mounted and used on numerous military aircraft, I think *The Final Countdown* was the first example of feature-film aerial work for us. Projects that followed included *Top Gun*, *Hot Shots!* and *Flight of the Intruder*. The 4ML was also used as a 'close-proximity camera' on *Armageddon*, for which it was mounted directly at the base of the shuttle rocket boosters."

For *Pearl Harbor*, the company recently provided two non-reflex 4ML cameras to be used as wing mounts and cockpit cameras. The camera can be fitted with PL, Panavision, BNCR or Nikon lens

mounts. "David Nowell tells me that he has put the 4ML on a Japanese Zero, an F-5 Tiger, an F-86 Sabrejet, a P-38 Lightning, a P-51 Mustang and a Curtiss P-40 Warhawk," Kiel says. "All of our cameras are designed to handle abusive environments; in fact, they've been used for many years in military, aerospace and nuclear test applications. Because of the 4ML's compact and rugged design, no one bats an eye when a feature producer requests that it be mounted to an aircraft."

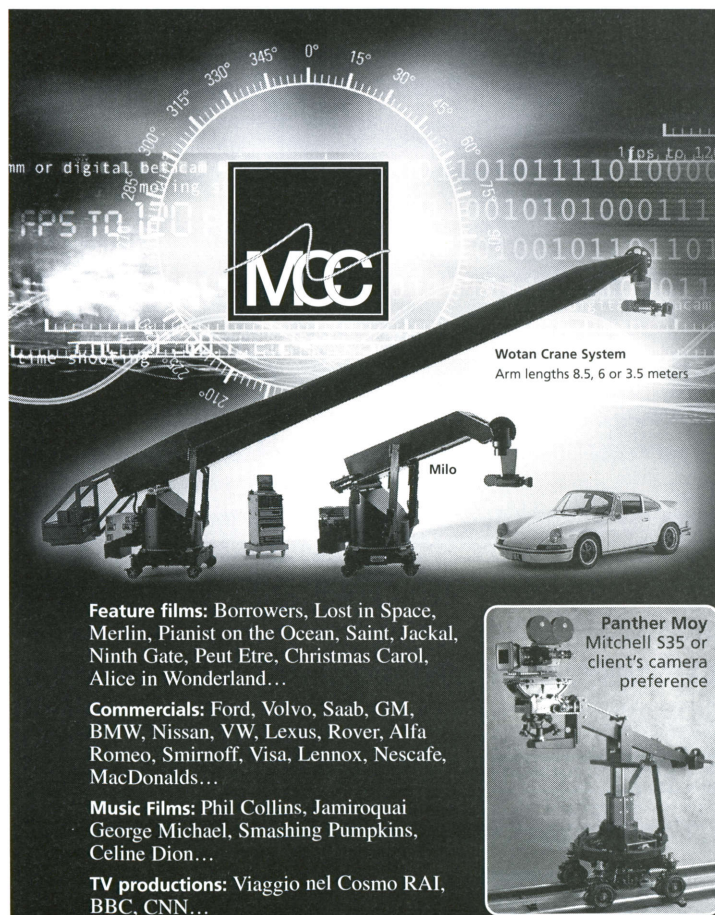
Aerial production services

In addition to companies manufacturing products for airborne filming, there are those that focus primarily on providing services, such as Aerial Cinema Productions of New York, which began operating about 10 years ago. "We offer full-service aerial production and coordination, providing

the helicopter, the pilot and mounts," says Ray McCort, pilot and aerial coordinator for the company. "Most of the time, we provide the whole package with the helicopter as a camera ship. Occasionally, we fly the helicopter without a camera if it is going to appear on screen as a picture ship or flying on a specific stunt sequence."

"We offer several types of helicopters; the most common are the Jet Ranger and Long Ranger [made by Bell Helicopters] and the Twin Star or A Star [made by American Eurocopter]. Our fleet is equipped with pop-out safety floats so we can operate over the water, too," says McCort, adding that the company has branches in Chicago and Atlanta.

Most of the company's business is a blend of features and commercials, with occasional calls for TV shows and music videos.



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"The first feature we did was probably *Now And Then*," he says. "We used the Wescam system and worked on the closing credit sequence. Demi Moore, Melanie Griffith and Rosie O'Donnell were all playing in a yard. The sequence began as a tight shot and pulled way up over the streets and houses. We started by coming in and hovering over the house, then zooming in on the actresses. As the helicopter flew away, we slowly zoomed out and tilted up to reveal the entire neighborhood."

"We did a similar shot for *Save the Last Dance* in Chicago, [which required] filming a moving train from a helicopter. We had to show one of the stars, Julia Stiles, inside the train. We zoomed in on her to a tight shot and then pulled away as the train went into downtown Chicago," he recalls. "That wasn't a special-effects shot; she was there in



Aerial Cinema Productions' Ray McCort and Production Helicopters' Geoff Palmer are among the trio flying in a tight formation over South Carolina during the filming of *Chill Factor*.

the passenger seats."

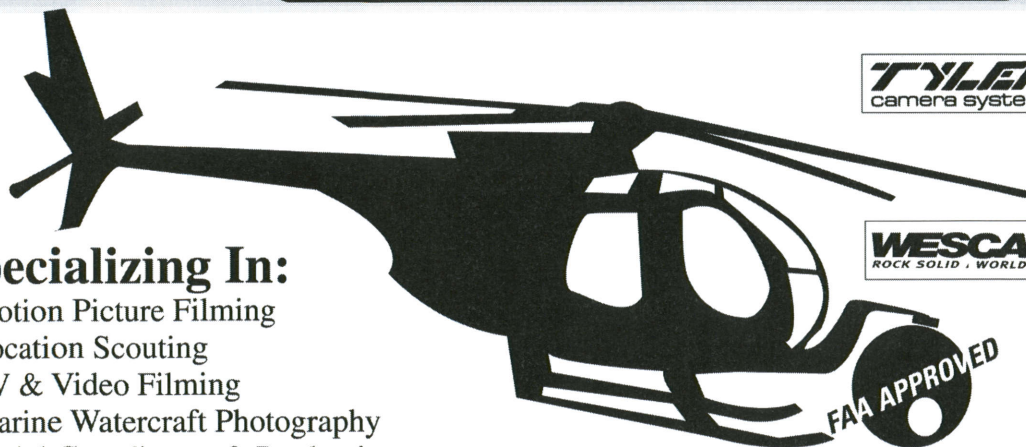
McCort says the company's most recent high-profile sequence appeared in *Chill Factor*. Shot by aerial director of photography and pilot Geoff Palmer, "it involved

several military Huey helicopters chasing down bad guys on location in Utah and South Carolina. The most difficult part was coordinating with the talent, because we were flying with actors in the helicopter

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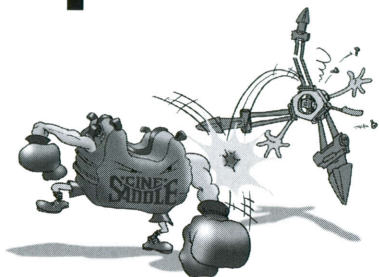
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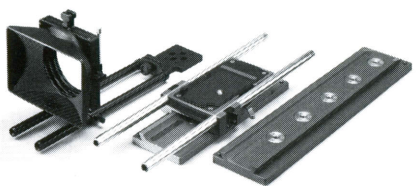
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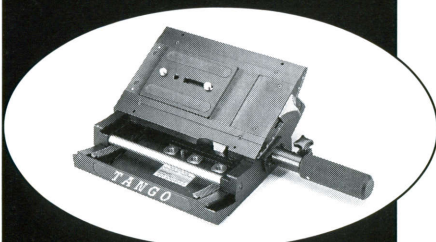
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Bird's-Eye View



Geoff Palmer pilots a Bell 206B helicopter with a Wescam mount operated by David Nowell for a sequence on *Shanghai Noon*. True to his legend, fearless actor Jackie Chan performs his own stuntwork on top of the train.

and on the ground. The direction of flight and especially the altitude had to be planned out very carefully."

Some of the biggest problems McCort confronts arise when directors want to film a specific shot that might be unwise from a safety standpoint. He says that many directors are not aware of all of the hazards involved in aerial filming. "They might have a particular shot in mind, but it's the aerial coordinator's job to keep things safe and sane," McCort points out. "We want the director to get his shot, but there may be several ways of achieving it. We always work closely with the director to find the safest way to do things while keeping him happy at the same time."

Production Helicopters of Los Angeles is also in the business of "aerial coordinating and safety," as president Geoff Palmer puts it. The company began operations in 1981 in Canada and received a number of calls for film work in California, which prompted a move to Los Angeles in 1992. (Branch offices are still located in Calgary and Vancouver.) "We started out doing both commercial and feature work, pretty evenly split," Palmer says. "Currently, we work back and forth

between here and Canada because there's so much production in Vancouver and the Rockies."

A typical job begins when a client contacts the company with an idea or a set of storyboards and asks how to put it on film. "In addition to deciding how to fly the sequence, we have to determine which aircraft to use, line up those aircraft for the required dates, and select the camera systems best suited for the shots they're after, depending on the creative requirements and the available budget," Palmer says.

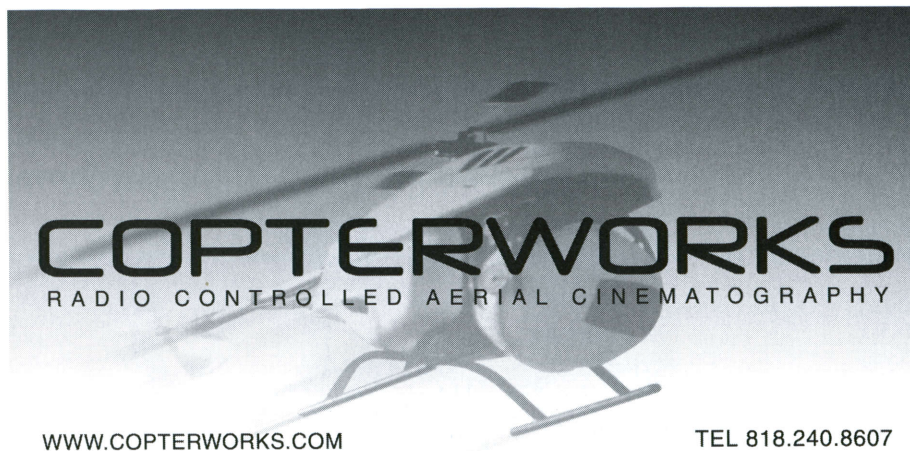
"Next, you have the safety work, which has to be done for everything from formation flying to working with extras and crew. You protect the aircraft from the crew and the crew from the aircraft. We determine where the risk is for each shot and then minimize it — eliminating it entirely, if possible. Then we set about managing any remaining level of risk. We work things out as completely as we can beforehand, keeping in mind that once we get on location, things might look a bit different."

Production Helicopters uses either the Bell Jet Ranger or the A Star for 90 percent of its jobs, accord-

ing to Palmer. "Most camera systems fit onto these ships — Wescam, SpaceCam, Tyler Mounts and so on. For the opening sequence of *Ace Ventura*, we used a Wescam, but because this was way up in the mountains, the helicopter we chose was a Lama SA 315. The Lama is a high-altitude helicopter, and even though the design is more than 20 years old, there's probably nothing that can touch it when you get up around 10,000 feet.

"The Wescam was mounted on the side, and I believe this was probably one of the first four-gyro systems used on a feature film. We took it up 10,000 feet in the Canadian Rockies, which is very extreme terrain. A stuntman was hanging off the side of a sheer wall, and we had to pull the helicopter into a very steady hover and zoom in on his face. The image had to be very solid, because Jim Carrey's face was later morphed over the face of the stuntman."

A Wescam on a more conventional helicopter, a Bell Jet Ranger, was used for a complicated train shot on the recent Western comedy *Shanghai Noon*, starring Jackie Chan. "The opening sequence was a little unusual," Palmer says. "It started out in a very confined area, a cut-bank. But the main problem was the timing. We had to fly over terrain and up to the top of a hill to get a tight shot of four cowboys on horses — and horses tend to rear as the aircraft flies past. Just as we cleared the cowboys, the train had to come around a bend and we had to swoop around it as the cowboys closed in on it. It was very difficult timing, but it worked out well." ■



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Top Guns

Crack aerial cameramen discuss some of their most ambitious — and hair-raising — assignments.

by Eric Rudolph

We thought we'd hear some pretty good tales from the people who fly through the sky shooting movies, and we were right. From the ups and downs of working in an airborne *ad hoc* movie studio to the problems that arise when a fashionable Italian dress meets strong helicopter prop wash, these guys have some stories.

In perhaps the most unique collection of airborne sequences ever filmed, aerial cinematographer David Nowell (*Wild Things*, *Armageddon*) and his crew shot nearly four hours of footage of leading Hollywood actors as they floated in true weightlessness. These sequences, of course, appeared in *Apollo 13*, the only theatrical feature ever to create a truly weightless filming environment (see *AC* June '95). Nowell says the weightless sequences were the "most fun" he's ever had on the job.

The *Apollo 13* weightless shoot took place during two widely separated weeks. During each week, director Ron Howard, actors Tom

Hanks, Gary Sinise and Kevin Bacon and the crew embarked on a pair of daily, three-hour flights on a NASA KC-135 plane, the same one that's long been used to train astronauts. Special sets representing parts of the crippled *Apollo 13* were assembled in the plane's large, open bay. According to Nowell, lighting was generated entirely by practical fixtures.

To achieve the weightless state, the plane would climb and describe the first half of a parabolic curve, and then descend rapidly starting at 34,000 feet, leveling off at about 24,000 feet. During the radical descent, a weightless condition was created for about 23 seconds. "[It] doesn't sound like much time, but it is actually quite a good span" in which to make a motion-picture shot, says Nowell. The aerial unit would usually do four or five weightless maneuvers in a row. In all, Nowell says, they completed 564 such maneuvers, resulting in about three hours and 45 minutes of film footage.

When *Apollo 13* was released, much was made of the plane's nickname, "The Vomit Comet," which came from the stomach-churning effects of the rapid descents. However, Nowell says that occasional airsickness wasn't the worst physical effect of the unique filmmaking assignment; rather, it was the fatigue. This was mostly due to the intense gravitational forces that occur as the weightless state ends. "Taking two Gs [of gravitational force] over and over again all day long is quite tiring," he says. All participants in those sequences were given anti-airsickness pills and had to undergo a complete pre-flight checkup, just as an applicant for a pilot's license would be required to do. They also had to undergo rigorous, astronaut-style testing to make sure they could withstand the stress of repeated weightless maneuvers.

As for stress on the KC-135, Nowell notes that the plane was the same one used to train the original *Mercury* astronauts, which means it has been climbing and doing radical

dives for about 40 years. Because of its role in the space program, it is “probably the best-maintained aircraft in the world,” he surmises. After the first week of *Apollo 13* filming, routine maintenance uncovered a slight crack in an engine pylon that would require three days to fix, so the film crew had to reschedule the remainder of the weightless shots for several months later. “That crack might have gone unnoticed on most other planes,” Nowell suggests, highlighting the plane’s meticulous maintenance regimen.

The delay actually worked in the production’s favor, because when the cast and crew finally returned to complete the weightless filming, principal photography had otherwise been completed. Nowell recalls that “Ron Howard had a very clear idea of which scenes he really needed to shoot in weightlessness [by then],” and the team had already filmed under those trying conditions, so things went much more efficiently.

An earlier space opera provided another good war story for Nowell. On 1978’s *Capricorn One*, the tale of a faked moon landing, a 60’ model of an Atlas rocket booster was to be filmed so it would appear that the camera was swooping in from on high and then moving right up close to the base of the missile. The plan was to start shooting at the final close position, with aerial cinematographer David Butler lying on his stomach on a special, low-slung dolly to which the camera was mounted. Butler would be pulled back on the dolly and then he and the dolly would be hooked to a specially rigged helicopter, which would pull up and away from the model rocket. A frame-rate change (from 24 fps to 6 fps, to speed up the move) and the necessary aperture adjustment were also planned. The film would be reversed in postproduction, resulting in a dramatic swoop down to the base of the about-to-launch booster. (Nowell

was Butler’s assistant cameraman.)

On the first take, however, Butler did not get hooked into his special harness properly. Nowell had climbed aboard a platform rigged to the chopper and immediately saw that Butler was in jeopardy, but his headset had not yet been connected to the jack on the helicopter, so he was unable to warn the pilot. The aircraft pulled away, heading out toward the ocean, and Butler dropped about a dozen feet to the sand, sustaining cuts and bruises. The camera was more seriously injured, however. The shot was then

“With the [Japanese] Zeroes swooping overhead and the explosions, I felt as if we were living through the attack, even though we were only re-creating it in five- or 10-second bursts.”

— David Nowell, on filming the upcoming epic *Pearl Harbor*

deemed too dangerous, and no second take was attempted.

Nowell’s most recent assignment, as aerial-unit director and aerial director of photography on Jerry Bruckheimer’s *Pearl Harbor*, was mostly mishap-free. However, he says the assignment was notable for the intense feelings he experienced while re-creating history. “We were simulating the [Pearl Harbor] attack on the actual spot,” Nowell explains. “With the [Japanese] Zeroes swooping overhead and the explosions, I felt like we were living through the attack, even though we

were only re-creating it in five or 10-second bursts.”

With big-budget feature films such as *Pearl Harbor* continually upping the ante, sometimes regular helicopter shots simply aren’t good enough. Directors often want helicopter-mounted cameras to be able to shoot actors at near eye level, but they also want to avoid the dangerous and messy prop wash. To meet this need, long-line aerial cinematography was developed, allowing a gyrostabilized camera unit to be dangled from a helicopter by a long tether.

A few years ago, Michael Kelem (*Primary Colors*, *Tin Cup*) created an arduous shot for a Chevrolet commercial that required highly complex long-line work. The idea was to open on a farm field containing a crop design, as seen from a near-outer space vantage point. The camera would then descend rapidly to eye level and dolly right up to the crop design, which turned out to be nothing more ominous than a family having a picnic by its Chevrolet.

The shot was set for filming in reverse, with the camera, in a Gyrosphere stabilizing unit at the end of a 50’ tether, resting in a pickup truck bed. The truck was to drive away from the actors, and the helicopter (with Kelem manning the joystick camera control on board) would then lift the camera off the truck via the long-line tether and take it up as high as possible. “Long-line work is extremely tricky, because the pilot must anticipate every move the dangling camera sphere will make and perform a countermove with the helicopter to prevent the camera from swinging like a pendulum,” Kelem explains. “It is the exact opposite of what you normally want in aerial work, which is to keep the plane as steady as possible. The ship must consistently make some pretty violent moves, and it turns into a rough, bumpy ride.” (The gyrostabi-

Top Guns

lization prevents the camera from spinning on the tether's axis.) Long-line shots are so complex that they often require dozens of takes to perfect.

While the dolly move-to-airborne ascent (which is seen in reverse in the TV spot) might sound like more than enough razzle-dazzle, the director wanted even greater visual dynamics. "To get that feeling of descending from outer space fast, we ramped from 24 fps to 3 fps during the airborne portion," Kelem recalls. "The director also asked us to rotate the camera around its visual axis. Of course, the rotation had to be done very slowly because of the extreme undercranking, which would speed everything up tremendously. I had to exert very gradual but consistent pressure on the joystick."

That *still* wasn't the end of the complications. In order to stay out of the shot, the truck that served as the dolly had to drive away at very high speed after the camera was lifted from its bed, because the chopper was gaining altitude (thus increasing its angle of view) at such a rapid rate. This complicated matters and added to the high take count. It ultimately required 30 takes to get the ambitious shot just right, "but it was worth it," says Kelem.

Long lines are also used for filming eye-level scenes, such as kayakers on the water in narrow canyons and skiers rushing down the slopes among trees. Following a skier down a tree-covered slope from a helicopter with a 200-pound camera ball at the end of a 50' rope might sound suicidal, but Kelem says experienced pilots are more than up to the job. He notes that the tether and camera unit can be quickly disengaged if trouble develops, sacrificing the camera package rather than the crew and helicopter.

Kelem says he's never had a close call on a long-line job, and his pilots have never had to disengage

the camera. Not that one pilot didn't have a plan to do so: "We were dolly-ing around an actor standing right on the edge of a partially frozen lake, and the pilot told me, 'If the actor falls in the lake, I'm going to release the camera tether so he can grab onto it.' I politely suggested that we consider developing an alternative rescue plan," Kelem deadpans.

Long-line work might seem like a lot of bother, but it serves a purpose, as prop wash can indeed be

"Long-line work is extremely tricky, because the pilot must anticipate every move the dangling camera sphere will make and perform a countermove with the helicopter to prevent the camera from swinging like a pendulum."

— Michael Kelem

a major problem during helicopter shots. David Norris (*Entrapment*, *Good Will Hunting*), a New York-based camera operator with Wescam, recalls two incidents in which eager directors discounted warnings about the maelstrom the big blades can stir up.

Shooting an Italian commercial for a front-loading washing machine was one of Norris's most memorable near-disasters with prop wash. The spot called for the camera to start off with a tight shot of the clothes flopping around in the washing machine's window and then pull out to reveal that the washer was sitting amid a huge, muddy field, with a stylishly dressed Italian woman standing nearby. Norris warned the director that when the

camera was in tight on the little window, the prop wash would probably pose a problem, but the director went ahead with the shoot. The model, in dedicated Italian *styla* fashion, was wearing a sheer, low-cut dress and no underwear. Just as Norris predicted, the prop wash blew the flimsy dress up almost around the young woman's neck.

Reversing the shot so that it started with the wide view and ended on the tight shot of the machine's window solved the problem. (The film would be reversed in post.) The model simply stayed out of the frame when the chopper was close enough to whip things up, and resourcefully held down the hem of the dress with her hands. As the chopper pulled out, she got into position by the washer. "There was some debate among the agency people as to whether anyone would notice that the clothes were turning the wrong way in the washer [in the reversed shot]," Norris notes with bemused disbelief.

On another project, about 20 people were gathered on a college tennis court for a helicopter shot. The camera was to start out on one person and pull back to a high altitude. The shot would then be composited so that it would look like a satellite view of North America, with the advertiser's logo formed by electronically multiplied multitudes. (The 20 people were to be digitally cloned in post.) To facilitate the matting, the tennis court was covered with linoleum-like greenscreen material. Norris warned the director that the greenscreen, which was loosely tacked to the edge of the court under lightweight wood stripping, would likely be loosened by the prop wash, but the warning was ignored.

The shot was to be done in reverse, so the camera had to start up high and come in quite low, ending with a tight shot of the single individual. When the helicopter got down close to the court, the director

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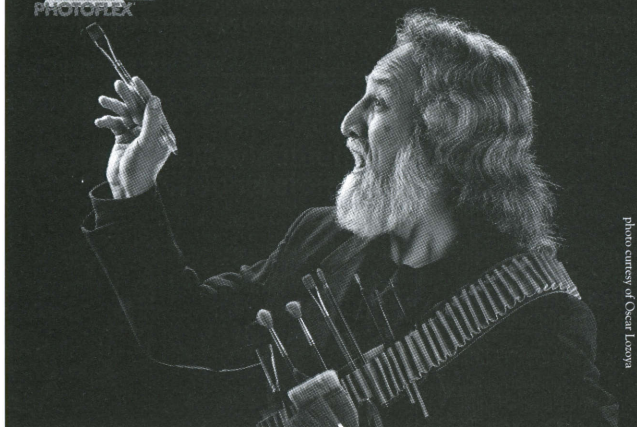
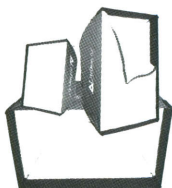
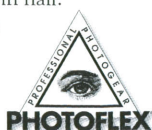


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kept calling for it to go lower. As the pilot complied, the prop wash became so intense that the greenscreen began to detach from the court. The director then hastily called for the ship to pull back. "However, when you start to pull away you have to increase power, and the prop wash gets much worse," Norris relates. Seconds later, the greenscreen material completely detached from the tennis court and flew to pieces.

Fortunately, no one was injured, and the crew solved the problem by painting the tennis court with greenscreen paint and recovering several large pieces of the linoleum-like material. The shot was completed that same day.

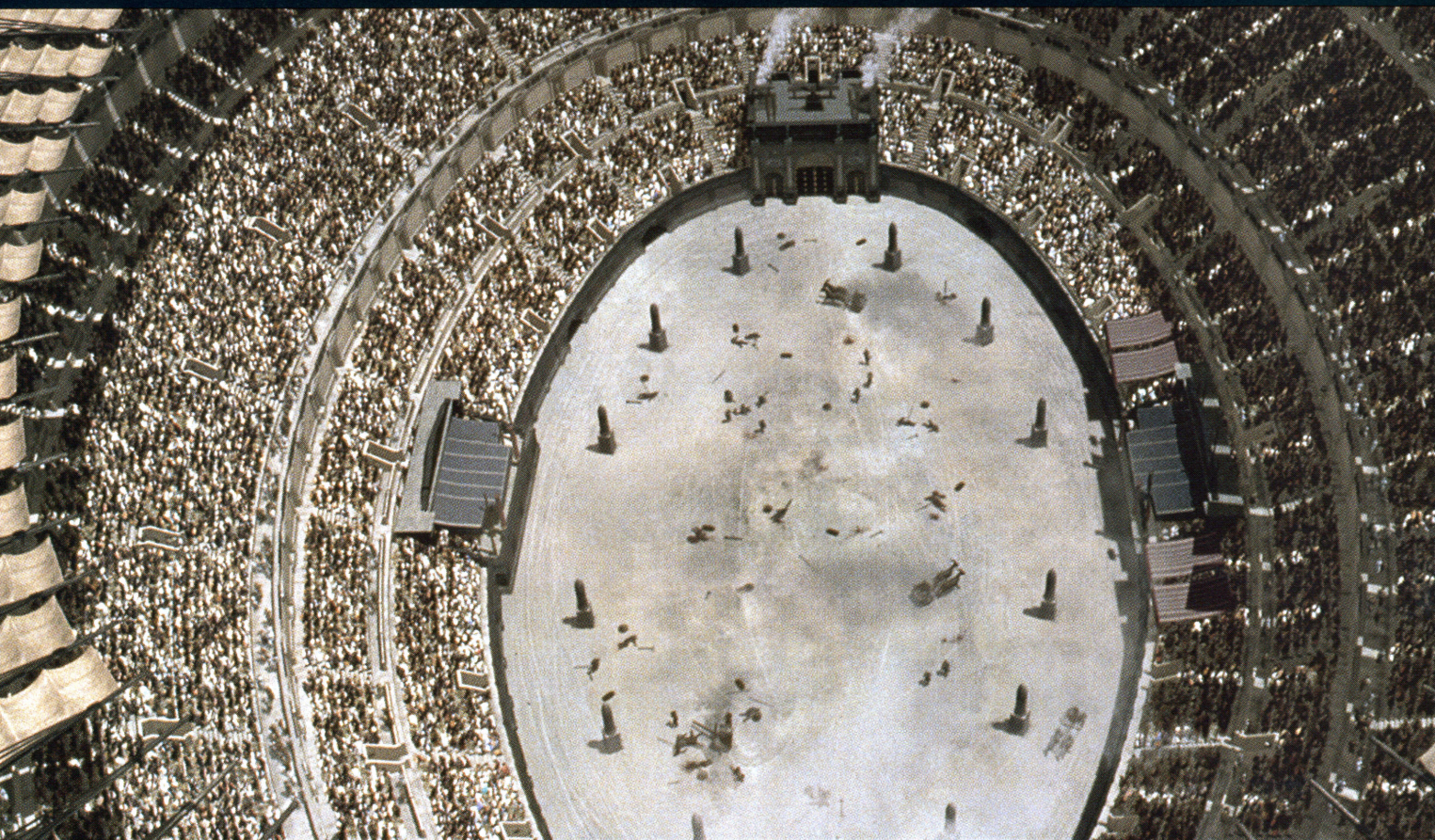
"When you start to pull [the helicopter] away, you have to increase power, and the prop wash gets much worse."

— David Norris

Prop wash is not the only hazard of helicopter filming; the noise the machines create, especially in densely populated areas, can also cause various production headaches. Pilot Al Cerullo has been flying movie helicopters around New York City for about 25 years; his credits include *Klute*, *King Kong* and *Superman*. He says New Yorkers have gotten more and more sensitive to the noise created by constant fly-bys. "There is a coalition in New York City [that works] against helicopters" involved in aerial cinematography, he reveals.

However, some city residents do more than complain. On *Superman*, Cerullo was hovering in a camera chopper about 30' from an

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apartment tower on Manhattan's intensely crowded Upper East Side, when occupants of the building apparently became displeased with the racket. "We were shooting the scene on Lois Lane's balcony [with Christopher Reeve and Margot Kidder]. The company had bought out the entire penthouse level, but there were people living on the floor below. It was nighttime, and the people became so displeased that they threw tomatoes at us! They even hit the camera!" Cerullo notes with incredulity.

The helicopter-intensive film *Conspiracy Theory* contains a scene in which men rappel down from a black helicopter into a Manhattan park, but the shot almost didn't happen because of safety concerns. "It took months to get permission to shoot that scene in Union Square Park [near 14th Street]," Cerullo recalls. "We had the Department of Transportation, the Mayor's Office and the Police Department all involved in processing the request. They thought we were crazy! We finally convinced them it was safe — we wouldn't suggest anything that didn't have a large margin of safety."

The production had to shut down the surrounding streets from 6 to 11 p.m. on a Saturday night, and Cerullo flew the helicopter as the stunt people rappelled down to the park. "We were supposed to have a camera 'copter' as well, but we had such a hard time getting permission for one ship [that the scene was covered with ground-to-air filming only]," he says.

Cerullo often pilots helicopters onscreen, and in doing so he must assume the look of whatever character is supposed to be flying the bird. That can lead to some funny getups — including more than one dress, according to his associates. In the recently released *Me, Myself & Irene*, the character flying the helicopter is a young black man who weighs about 300 pounds. "I had to

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get dressed in padded clothes and dark makeup, and it was about 100 degrees for the full week it took to get those shots last July," Cerullo recalls with lingering discomfort. As if that wasn't bad enough, Cerullo also had to execute precision maneuvers. "We were shooting a scene in which Jim Carrey and another actor were picked up out of the water by the helicopter, and that type of stunt requires very exacting flying," he explains.

Although unhappy, tomato-wielding New Yorkers might be

"It was nighttime, and the people [at the penthouse level] became so displeased that they threw tomatoes at us! They even hit the camera!"

— Al Cerullo, recalling the filming of an aerial sequence in Manhattan for *Superman*

daunting, their wrath is nothing compared to Mother Nature's. Bobby Zajonc (*American Beauty*, *Air Force One*, *Face/Off*), one of Hollywood's top helicopter pilots, recalls returning to the Hawaiian location of *Jurassic Park* after a hurricane blasted through with winds of 176 m.p.h. "We'd flown our helicopter off the island because of the hurricane warning, even though we were laughed at by the locals," who said they pay no attention to such warnings, Zajonc recalls. "Well, there were 17 pads [on the island], and [when we returned after the storm] there were 16 helicopters that were twisted beyond belief!" The film's bird sat safe on another rock.

Although the Army-trained Zajonc is the man producers call when they need an on-camera heli-

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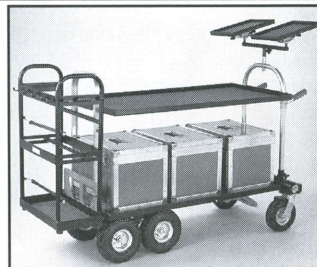


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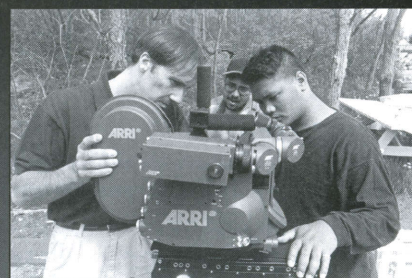
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copter to do some wild flying, he says he is more interested in manning the bird for directors who use creative aerial work as a way to "keep the blood running through the story." He cites David Lynch's *The Straight Story*, on which he was aerial coordinator, as a good example of a film in which the director exploits the artistic abilities of the flying camera. Zajonc says the shots in which the camera is "floating through the fog" or watching Alvin Straight's lawn tractor creep across the landscape from on high are examples of a director creatively using his aerial team. That approach is "just so different from the bang-bang car chase" work

"We'd flown our helicopter off the island because of the hurricane warning, and [when we returned after the storm], there were 16 helicopters that were twisted beyond belief!"

— Bobby Zajonc, on shooting in Hawaii for *Jurassic Park*

that has become so common in today's films, he opines.

Most recently, Zajonc had the opportunity to fly a helicopter quite low through the streets of Chicago for *The Adventures of Rocky and Bullwinkle*: "They took down all the street signs and trimmed the trees. I flew with about six feet of blade clearance on each side!" However, he hastens to point out that aerial cinematography is not about individual heroics. "It's a team that gets the shots," he maintains. ■

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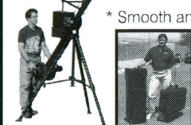
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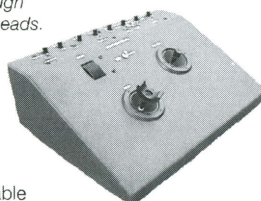
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Short Takes

For Korn's "Somebody, Someone," director Martin Weisz wanted a different perspective on a performance video. However loud and raucous a band might get, he points out, the walls and ground don't actually shake for the average listener. But from the point of view of something extremely small — an insect, for example — a rock band's performance could be a near-catastrophic event. In conceptualizing "Somebody, Someone," Weisz decided to let the audience experience a Korn performance from the point of view of a spider, a cockroach, some fleas and a fly (the main character). "For the fly, it's the worst nightmare," he says.

To photograph the spot, Weisz turned to cinematographer Jeff Cutter, who has been his frequent collaborator over the past year. Weisz, a cinematographer himself, claims to have been hard on Cutter, especially during their early projects together, but Cutter disagrees. "He makes it easy for me to do my job," Cutter says. "He knows what he wants, but he also knows what it takes. He'll give you a set that's great to light." Weisz doesn't just provide him with four white walls, he explains, but arranges for good practicals and for other places to put lights.

The two also share a similar aesthetic sensibility. "We like things to be really dark and moody, [and] we both like anamorphic," Cutter says. Because both have an affinity for working on reversal stock, nearly all of their recent work together has been shot that way. Cutter adds that as much as he may stump for using the more expensive reversal film, it makes a huge difference to the production staff when the director insists on it, too: "When he says we need to shoot reversal, that adds a lot more

Korn Blasts Tiny Eardrums

by Stephanie Argy



Director of photography Jeff Cutter captures Korn in action on the first day of a two-day shoot for the video "Somebody, Someone."

weight to it."

Cutter also appreciates the lead time he gets from Weisz. "I probably do more preparation with him than with most other directors. [With] others, we don't talk until the scout. With Martin, I'm brought in a week ahead — and that's a lot for a music video."

Because the video features many computer-generated elements, Weisz storyboarded it in great detail, using polygon-based figures made in Metacreations Poser and assembled in Electric Image. "He had his angles, he had his shots, and he had the whole thing cut to the music," says Cutter. "We adhere pretty closely to the storyboards, [though] not with every shot."

"Somebody, Someone" was shot over two days, the first focusing on the

band and its performance, and the second on the insects. "We [discovered] that shooting a fly and a spider is not that easy to do," says Weisz, adding that the fly was actually glued to a piece of thread. "That way, you can have it on a string."

For insect close-ups, Cutter used Innovision's Probe II Plus, a snorkel-lens system that comes with a variety of lenses. "The extreme, extreme close-ups were done with an Endoscope," he says. "It's a weird medical lens that's like a T45. It was quite strange."

One big question going into the shoot was how Weisz and Cutter could capture the fly's POV shots. According to Cutter, the standard approach would be to put a very wide-angle lens — perhaps an 8mm — on a Steadicam,

Cutter straps on an Easyrig and Rollvision as he prepares to create a fly's POV. To get the desired effect, Cutter ran around a room and director Martin Weisz moved the camera via remote control.



but he and Weisz chose to devise a different technique.

Cutter says that Weisz is very interested in technology and tries to stay up to date on new equipment. "He does a lot of research to figure out the best way to achieve what he wants," says Cutter. For the fly's POV, Weisz came up

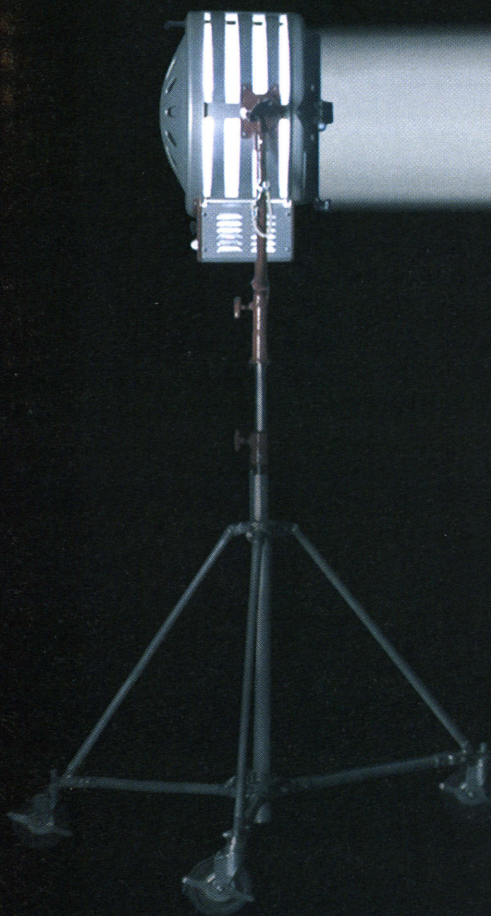
with the idea of using Coptervision's Rollvision system (provided by Innovision), a three-axis portable head that's operated by wireless remote control. "It's a gyro unit that they use on a helicopter mount," explains Cutter. "The camera can roll, pan and tilt inside this ball." For "Somebody, Someone,"

the Rollvision unit was mounted not on a helicopter, but on Cutter, who was wearing an Easyrig, a lightweight camera-support system that he describes as "the poor man's Steadicam."

Mounted on the Rollvision was a small SL Cine 35mm camera modified by Innovision, with a 20mm lens and a wide-angle adapter that helped create the bending distortion that the filmmakers sought in their imagery.

Creating the fly's POV was actually a collaboration, with Cutter wearing the rig and Weisz moving the camera via remote control. "I was just running around as if I was the fly," says Cutter, "but I couldn't see through the lens. Martin actually did the operating. He liked the idea that two people were doing two different things, because he wanted the look to be erratic and weird. It was very cool, actually. The best part was that we achieved what he wanted, [and] it was hard to tell how we shot it."

In keeping with their growing tradition of using reversal stock, Cutter



and Weisz shot the Korn video with Kodak's daylight reversal 5239, a 160 ASA stock. Like many of Cutter's jobs with Weisz, the video was also shot anamorphic using a PanArri 435 camera. Cutter says he enjoys any chance to work in an anamorphic frame. "I find it much more rewarding," he explains. "There's something so 'epic film' about anamorphic. It's just so Hollywood. I'm much more of a movie person at heart."

At the same time, he notes that working in anamorphic has its limitations. "You definitely want to have a bit more light! It's nice to be able to have a little more depth [that way]. You have to give it a little [extra], or the depth of field becomes so shallow that you can't even tell what the background is. Of course, [anamorphic] is also much harder on the camera assistant."

Making the lighting demands more difficult was the fact that Cutter was not only working in anamorphic, but also using a relatively slow reversal stock and very slow specialty lenses, as



Cutter gets ready for another shot. Mounted on the Rollvision is an SL Cine 35mm camera modified by Innovision, with a 20mm lens and a wide-angle adapter.

well as shooting at speeds as high as 150 frames per second. Any of these factors alone would demand more light, and together they presented an enormous challenge.

Cutter used mostly daylight-balanced Kino Flos that were mounted in the ceiling. "For the most part, the people

in the video are top-lit," he says. "We didn't really have any hard light." He also blasted a couple of 10Ks and Maxi-Brutes though full blue frames, with Rosco Opal or Lee 250 (1/2 216) diffusion. For close-ups of the insects, he went with 4K Pars or Dedo Cools. "We needed a lot of light, but we didn't want to burn

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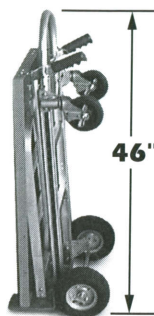
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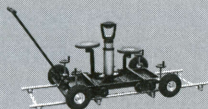
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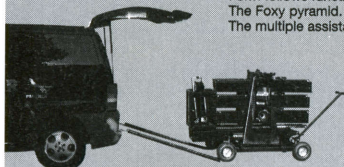


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the bugs."

After the shoot, the footage was turned over to the visual-effects team at 525 Studios in Santa Monica. Pasquale Croce, a visual-effects supervisor, heads a new division within 525 that is affiliated with Buf Compagnie, a French visual-effects company renowned for its work on such films as *City of Lost Children* and *Fight Club*.

Among other things, the artists needed to create computer-generated insects to supplement the real ones photographed by the live-action crew. The effects process began with a 3-D fly model, imported from the archives of Buf Compagnie in France, where it had been modeled in the company's proprietary software. This model was then modified to match the real flies from the shoot.

Next, a simplified version of the fly, converted to polygons, was exported to Softimage, where animator Steward Burris could create motion paths for the insect's movement. At the same time, Croce and CGI artist Jay Odom could continue working on the look and texture of the fly, because the animation and texture can be rendered together later on in the process. "In Paris, we used to call that method 'the washing machine,'" says Croce. "You repeat the same process for each shot — the lighting, camerawork and animation change, but the fly doesn't." He adds that working this way demands much less computer memory, which allows the animation to happen quickly. "If there is a problem with the animation of the fly, we can just tweak that one thing."

Croce worries that as software packages grow more and more complex, trying to be all things to all artists, they can actually make the process more difficult. "This is an artistic job, but it's also very technical," he says, adding that when software focuses too much on the needs of the artist, it often shortchanges those who understand the technology in a more fundamental way. "The machine is made to work *for me*," he asserts. ■

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Points East

Investing in Stock Footage

by **Eric Rudolph**

If notorious director Ed Wood's infamous use of canned images or a static establishing shot of London's Big Ben come to mind when you think of stock motion-picture footage, it may be time to take a fresh look at a specialty one practitioner calls "the hidden secret of the film business."

New Yorker George Billard shot 105 days' worth of stock footage in 12 countries last year, and says that the self-financed trip has resulted in a flood of new business through his agents at The Image Bank. "The demand for stock moving images has exploded in the last three years, as it has become more and more accepted by higher-end advertisers [for use in commercials]," he says.

According to Billard, the boom in demand from commercials and other venues is due in great part to the digital revolution. The endless variations that can now be easily wrought on a stock shot via digital compositing have made library images more useful. "One of my most popular images is a close-up of a blue eye," Billard says. "This shot is now often digitally composited [by commercial producers] with all kinds of things flying out of the eye."

The changes in the visual language brought about by digital editing and compositing, as well as by youth-oriented cable outlets such as MTV, have also helped stock to grow in popularity, Billard says. "We now see four or five images in the time in which we used to see one," he notes. The resultant need for more images, and to tell a story visually in a shorter time span, also helps business. "If you need an image that says global technology in two or three seconds, you don't just want a shot of the



Eiffel Tower; [you want] someone talking on a cell phone or using a computer [in front of it]," he explains. Those are precisely the kinds of images stock specialists have been creating recently.

In television and feature films, the use of stock hasn't changed much. Billard notes, "It is still used for establishing shots in sitcoms, [mostly] for when the characters go to another country." However, that is also beginning to change. "Oliver Stone has used stock in some of his collage-style sequences, and when someone of his stature does so, other filmmakers may come to think of stock footage as another tool in their storytelling kits."

Online access to image samples has also greatly cut research time, making the stock-selection process much more efficient. Billard maintains that it will soon be practical for high-resolution footage to be delivered as data through

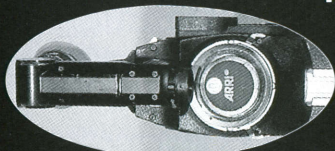
broadband Internet access.

The benefits of a career in stock-footage cinematography are manifold. As in still-photography stock work, the cinematographer remains the sole copyright holder. Billard points out that stock footage also has a tremendous shelf life. "Thirty years from now, my images of today will be used to show what life was like [at this time]."

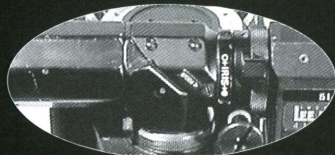
Billard came to the stock-footage business about six years ago while directing TV commercials. "I realized that as a commercial director I was more valuable — and it was more interesting — to be a director/cinematographer," he recalls. "I therefore pushed myself to shoot more and more film, making stock-type images for practice. Then someone saw my director's reel and suggested that The Image Bank might be able to use some of it." Thus began his career in stock cinematography; he also continues

Circling the globe in his quest for stock footage, George Billard (at far right) lands at the Pyramids of Giza, where two locals named Mohammed give him and 1st AC Tony Martin (center) and 2nd AC Matthew Gordon a hand.

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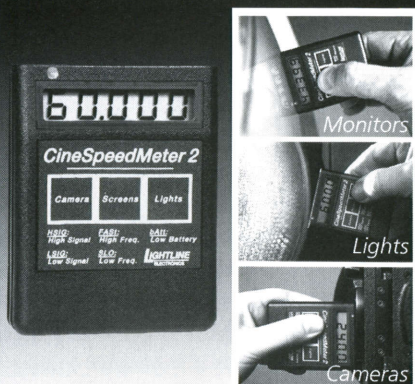
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to direct and photograph commercials.

Billard says he functions as "cinematographer, director, producer and sometimes production assistant!" As the shooting days add up, "[my] experience [in all of those areas] grows exponentially; I could never have shot 105 days in one year, as I did last year, doing commercials."

However, shooting stock is also a risky business. On his recent 105-day jaunt, Billard worked with two assistant cameramen, a PA/loader and 40 cases of rented equipment each day; the financial risks are not hard to calculate. "If you shoot a lot of 35mm film and it doesn't sell, you end up with a very expensive home movie," he notes, adding that a stock photographer should know what kind of footage already exists in abundance before setting out on the job.

The time-lapse market is pretty well-saturated, he observes, but there are still plenty of other types of images waiting to be filmed. "The keys are to listen to what your agents say their clients need, and to stay on top of trends in technology and demographics," Billard says. For example, the fact that the population is aging and also becoming more multicultural has led Billard to shoot more images of older people and ethnic minorities.

The majority of the licensing arrangements for his footage come from industrial and corporate films, but TV-commercial usages, while fewer in number, result in more money.

Billard favors Arriflex cameras, including the 35-III, which he terms "a tank." He admits that the noise produced by this MOS camera is sometimes a drawback. "In certain situations, that camera's high-pitched whine can set people on edge," he explains. When noise is an issue, he usually opts for an Arriflex 535 sync-sound camera. His main lenses of choice are Zeiss Superspeeds, as well as wider 12mm, 14mm and 10mm lenses. He also uses fisheye and zoom lenses.

Lest one think that a Billard stock shoot is a technically low-key affair, he notes that a Steadicam is also frequently employed for "mobility and speed," and

to create images such as a rush through a maze of office cubicles. He always carries a Matthews suitcase dolly and Sachtler and O'Connor heads, as well as a Dutch head. It is not unusual for him to even rent camera cars and cranes. Billard goes through a lot of film stock because he constantly shoots high-speed footage. "When you have three seconds to tell a story in a single shot, slow motion adds a lot of drama," he explains.

Financial risks aside, "there is a screaming demand for material worldwide," he says. "A shot of mine of a mom and a kid sitting in front of a computer has sold in Malaysia, Argentina and Brussels!"

While on a standard stock shoot — photographing passenger jets at New York's Kennedy Airport — Billard came across his current personal project, which he has financed through the sale of stock footage. Someone told him the airport employs a falconer, who uses the birds of prey to scare other birds away from speeding jetliners so they won't be sucked into the engines and cause an accident. Billard is currently completing his own documentary film about the falconer and his birds.

"It's a big world, and everyone needs content," he concludes. "If you can get a handle on that need, then stock is a filmmaker's dream. There are no clients and no schedules, and the income from my work, which is selling in perpetuity, gives me the freedom to pursue my personal film projects."

Eric Rudolph can be reached via e-mail at erudolph2@nyc.rr.com.

Errata

In the last paragraph of our recent article on *An Artist's Journey*, ("Moving to the Music," AC June '00) we incorrectly stated that the film was "output via laser to 65mm internegative film stock" at Digital Domain. In fact, the output of all 65mm film at Digital Domain was done on CELCO's CRT-based eXtreme film recorders onto camera negative film. AC regrets the error.

Books in Review

by Ray Zone

**Ten Thousand Bullets:
The Cinematic Journey
of John Woo**

by Christopher Heard
Lone Eagle
Publishing Company
270 pps., \$15.95
ISBN 1-58065-021-X

The hottest action film director in Hollywood today is from Hong Kong. John Woo's odyssey from Chinese martial-arts movies to the Hollywood "Hot 100" list is engagingly traced in this biography by screenwriter Chris Heard.

Born in China in 1946 and raised in a tough part of Hong Kong, Woo's early life was one of dire poverty. At an impressionable, early age, he was a close-up witness to street violence. "People were murdered right outside my door all the time," recalls Woo. "I saw it. I heard it. I felt like I was living in hell. I remember two big riots where people died right at our front door, killed by the police. Ever since then, I've wanted to use violence in my films to send a message."

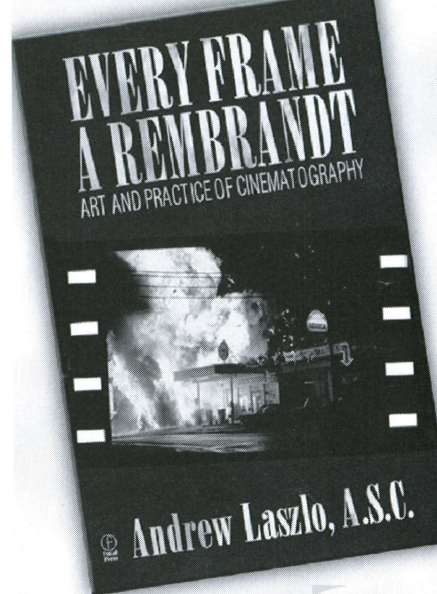
A confirmed movie fan by the age of 11, Woo took refuge in classic American films such as *The Wizard of Oz*, *Singin' in the Rain* and *West Side Story*. The balletic violence in Woo's films has often been compared to the work of Sam Peckinpah, but its stylistic roots can also be found in classic Hollywood musicals.

In 1966, at the age of 20, Woo began work at the Cathay Studios in Hong Kong as a general apprentice and script assistant. Later, after directing numerous martial-arts films for Golden Harvest and Cinema City Studios, Woo wrote and directed his 1986 breakout film, *A Better Tomorrow*, starring Chow Yun-Fat. Woo always cites Jean-Pierre Melville's 1967 film *Le Samourai* as his

favorite, noting, "It is a gangster film that is as much about the way a gangster thinks and feels as about the way that he behaves."

A Better Tomorrow demonstrated Melville's influence on Woo. It became a huge hit and made Chow an action-film superstar. Woo's next signature film, *The Killer* (1989), was an outright valentine to *Le Samourai*, weaving a complex story about a hitman who decides to quit his life of crime after doing one last job for a friend. Moral ambiguity fascinates Woo. "The killer is a man who does bad things," he says, "but he wants to be good." Woo's last Hong Kong-made movie, *Hard Boiled* (1992), features an amazing number of action scenes. Heard describes the picture as "truly breathtaking in its bombast," adding, "it went on to overtake *The Killer* as Woo's international calling card."

By 1993, Woo could no longer resist the siren call of Hollywood. He moved to Los Angeles and made his American filmmaking debut with *Hard Target*, a Universal action picture starring Jean-Claude Van Damme. It was one of the best action films of the year and did very well at the box office. While directing *Hard Target*, Woo called for a lot of action, and in this book, cinematographer Russell Carpenter, ASC remembers the challenge of filming a huge gunfight in an old warehouse filled with Mardi Gras floats. "Just the lighting of a space like that, with all those strange shapes and shadows, was difficult enough, but John then added the further complication of wanting the scene shot from several angles at once — often with more than one of the cameras moving." After completing work with Woo, Carpenter was impressed. "He uses it all... You can bet that every one of those angles will be used when the scene is



This book examines the art and craft of motion-picture photography through a veteran professional cinematographer's personal experiences on five major motion pictures, each selected to illustrate a particular series of challenges for the photographer.

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finally cut together."

Woo directed the big-budget action thrillers *Broken Arrow* in 1996 and *Face/Off* in 1997. Both featured many complex stunts and action scenes. *Face/Off* made more than \$100 million in its first six weeks of domestic release. As of this writing, Woo's latest effort, *Mission: Impossible 2*, appears to confirm the director's position as one of the top action directors in Hollywood.

Ten Thousand Bullets includes a Woo filmography and a very good Q&A with Chow.

Hollywood 101, The Film Industry

by Frederick Levy
Renaissance Books
304 pps., \$19.95 paperbound
ISBN 1-58063-123-1

There are many books of varying usefulness on breaking into the film industry, and Frederick Levy has written one of the soundest and most encouraging volumes on the subject I have yet found. From its clever cover art of a school notebook to its clean design and well-organized subject material, *Hollywood 101* is a definitive tome on "crashing the movies." It also includes inside stories from industry professionals such as director Jon Turteltaub, producer Debra Hill, screenwriters Dean Pitchford and Daniel Yost, production designer Gary Wissner and cinematographer Stephen Katz.

Levy started out the hard way — without a single contact in the entertainment field — in 1988. "I had always fantasized about moving west to pursue an entertainment career," he writes, "but I hadn't a clue about how to make it really happen. With persistence and passion, I got my first industry break. With just a bit of luck, I got my foot in the door. With a lot of hard work, I found initial success."

Today, Levy works in the film industry as a producer and development executive. In this book, he shares his knowledge and experiences in a way that is quite accessible and invaluable to those who aspire to careers in entertain-

ment. For those without such aspirations, the book is a concise and definitive survey of the film industry.

In the first section, "Preparing for a Career in the Film Industry," Levy provides practical advice to an aspirant pondering the journey to the movie mecca of Hollywood. "Prepare for your film career, to the best of your ability, before you leave home," he counsels. He also offers new arrivals to Los Angeles invaluable tips on housing, resumé, networking and finding entry-level work.

The next section, "Above-the-Line," offers three chapters examining in detail the roles of the writer, director and producer in film production. Proper format and submission guidelines for screenplays are provided, and the process by which films get into production is outlined. The third section, "Below-the-Line," details all of the craftspeople involved in a film, from the production office to assistant directors, cameramen, storyboard artists, costumers, editors, sound artists and everyone else.

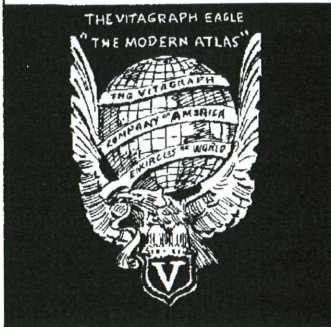
In the chapter "Lights, Camera, Action," Levy provides a clear delineation of the camera department, from director of photography and camera crew to gaffer and lighting crew, key grip and the grip department. (The ASC is featured and explained in a sidebar.) Cinematographer Stephen Katz, whose credits include *The Blues Brothers* (1980), *Gods and Monsters* (1998) and *Baby Geniuses* (1999), shares his insights in this chapter. "It's all about the eye," he says of his craft. "The technical stuff comes later. But all the technique in the world doesn't mean anything if you can't see."

The final section of the book, "That's a Wrap," includes invaluable information on entertainment directories, temp agencies, film festivals, film schools, Los Angeles resources, organizations and Web sites. A glossary and bibliography round out the section, along with details about guild and union minimum payments. ■

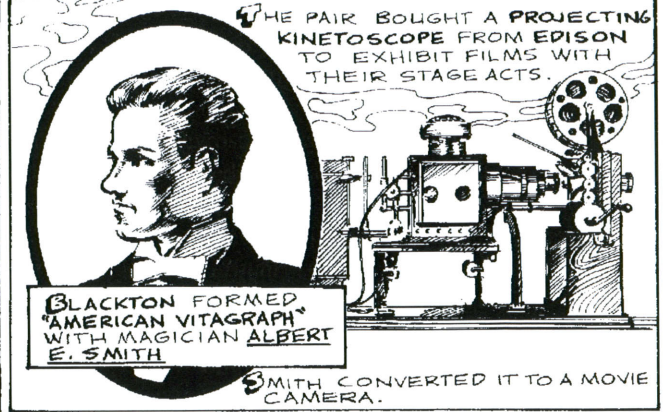
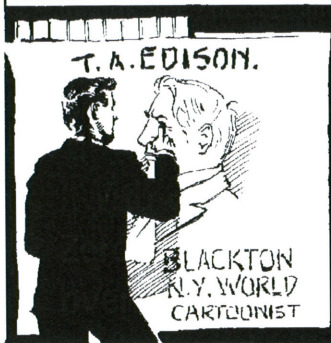
THE VITAGRAPH

by Ray Zone & Chuck Roblin

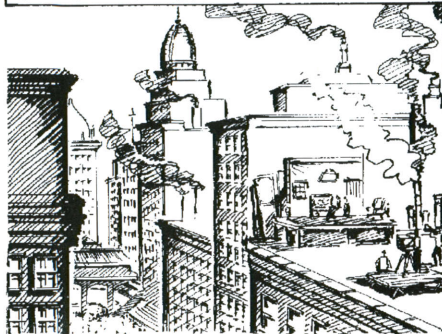
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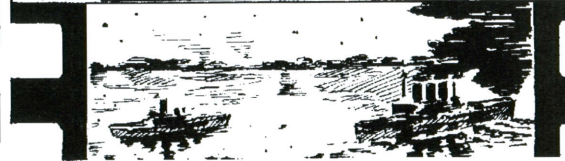
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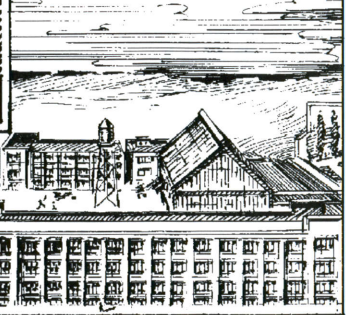


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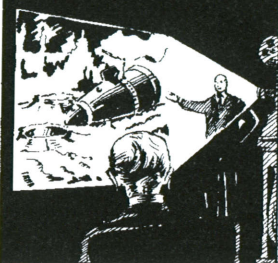


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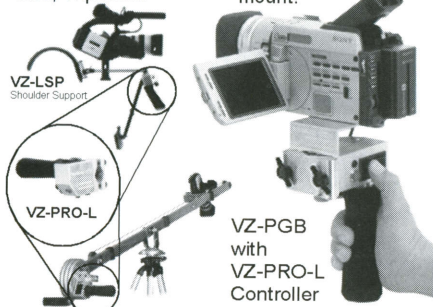
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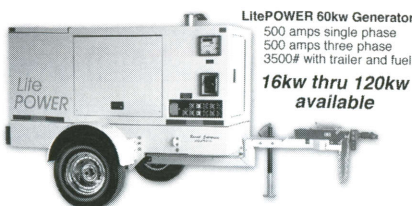
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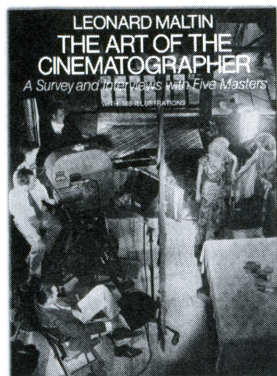
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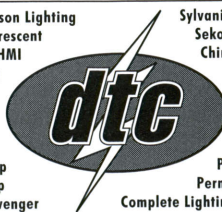
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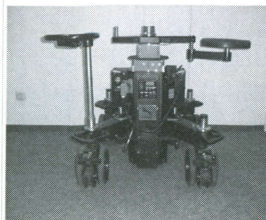
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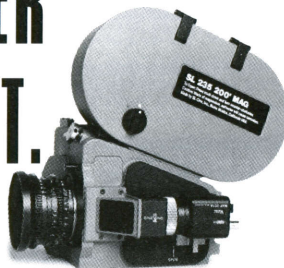


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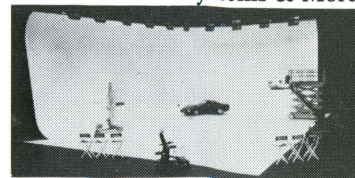
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Lighting Dances With Wolves With Dean Semler, ASC, ACS
Program includes Semler discussing and demonstrating:

- Widescreen composition.
 - The relationship between lighting design and coverage.
 - The best use of high-speed film stocks in low-light situations.
- F785 29 min. Producer: AFTRS

Lighting Dead Poets Society With John Seale, ASC, ACS
• Seale guides the students and our camera through the lighting setups he used for scenes set in summer, winter, night and day.

- He also divulges tricks and techniques that he uses to achieve extremely difficult effects while maximizing the number of takes each day.
- F786 28 min. Producer: AFTRS

Studio Lighting: A Comparative Workshop With Donald McAlpine, ASC, ACS & Denis Lenoir, AFC

- Topics include:
- Studio practice
 - Lighting design
 - Color temperature
 - Lighting metering
 - Use of practical lamps

F787 59 min. Producer: AFTRS

Location Lighting With Geoff Burton

- Topics include:
- Maximum use of natural lighting resources.
 - Working with limited space on location.
 - How fast stocks and fast work can be critical to success.
- F788 29 min. Producer: AFTRS

MASTER CLASS SERIES VIDEOS

Shooting for Realism With Allen Daviau, ASC & Sacha Vierny
Program highlights:

- Daviau and Vierny were each given the same script and set to work with, and they share their individual approaches to the problem.
 - Computer graphics of the lighting setups as well, as side-by-side comparisons of the finished scenes, illustrate their approaches.
- F802 55 min. Producer: AFTRS

Shooting for Drama With Robby Müller, NSC, BVK & Peter James, ASC, ACS, CSC
Program highlights:

- Each cinematographer was given the same script and set constraints. The results were beautiful images that reflect their different backgrounds and philosophies on the art and business of filmmaking.
 - The video culminates with a split-screen comparison of each cinematographers finished piece.
- F803 55 min. Producer: AFTRS

Shooting for Fantasy With Sacha Vierny & Denis Lenoir
Program highlights:

- Lenoir demonstrates how to use one special effect to hide another.
 - Learn how to combine several effects to create magic.
- F804 55 min. Producer: AFTRS

Shooting for Black-and-White With Allen Daviau & Denis Lenoir
Program highlights:

- As well as being a storehouse of practical information, this program is an ode to the haunting beauty of black-and-white cinematography and a wonderful essay on the changing art of the cinematographer from the 1920s to the present day.
- F805 55 min. Producer: AFTRS

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Filmmakers' Forum

When Will Film Be Dead?

by **Steven B. Poster, ASC**

The film industry has lately been inundated with a barrage of exclamatory — and contradictory — claims. Film is dead! Film is not dead! Digital image acquisition will take over! Film will never leave us! Theaters will project electronically by next year! Film will be projected in theaters forevermore! New technology (what a buzz word *that's* become) will forever change the way we see, hear, interact and are entertained.

Well, I have seen the future, and the future is now. And that *is* the truth! We do know that the more things change, the more they stay the same. (Remember the paperless office?)

What *is* changing is the opportunity for cinematographers to have more brushes and a larger palette. What's *not* changing is the art of telling stories with moving images.

Don't make the mistake of imagining that it will somehow no longer be necessary to design the composition and the movement of the frame, to design the quality and shape of the light, or to design the continuity of images from the beginning of the story to the very last shot so that audiences' emotions and souls will be touched by the stories we tell. Technology in any form will never make these skills unnecessary.

The American Society of Cinematographers has traditionally been the gatekeeper of technical excellence in terms of visual expression for motion pictures and television. As gatekeepers, we must remain vigilant to maintain the quality of showmanship in all forms of visually recorded entertainment. Over the past several years, there has been hysteria in the face of the coming of digital — often referred to as "technolust." Digital imaging, capture and display is

the most sought-after and the most feared new technology that almost nobody has ever seen.

Yes, a few of us have had the privilege of seeing certain image-capture demonstrations. The public has even been subjected to a number of theatrical demonstrations that amounted to laboratory experiments, featuring hundreds of thousands of dollars of prototype playback and display technology, and at least two highly trained engineers in the booth making sure that the equipment kept running.

You know what? This stuff looks really good! But is it film? Of course not! Should we, as artists, be afraid of it? Of course we should not.

Digital imaging is a new medium, and it should be thought of and used as such. Just as you would choose to use a certain emulsion or a quality of image created by lighting and filtration, you might choose a 24p HD Panavision camera with superior lenses designed specifically for high-end digital imaging, or even a \$4,000, low-end Prosumer digital camera. The medium must fit the message, not the other way around.

I saw *The Blair Witch Project* before all of the hype, during the very first screening at the 1999 Sundance Film Festival, and I'll admit that the movie scared the pants off of me — my heart was pounding for two hours after I saw it. Does the fact that this paradigm-shifting movie was shot with both a consumer Hi-8 camera and jerky black-and-white 16mm film make it any less entertaining? Of course it doesn't. The public saw that movie in theaters because they wanted to be scared and entertained.

Have the new digital tools changed the way we make movies? In some ways, they have. However, we are master craftsmen and women. As such, we will easily learn to use these new tools, just as we will continue using the beloved, more mature tools that have been used to create the beautiful images we've been seeing for more than 100 years.

Major improvements to the technology of motion-picture film projection are being designed and invented by large corporations like Eastman Kodak and entrepreneurial start-ups like MaxiVision. Hopefully, these developments will significantly raise the bar of showmanship in theaters.

Please remember that it is much more important to enhance the experience that audiences will have in the future than to just equal what we have in theaters today. Whether that's done digitally or traditionally, no one can predict. But if we don't reach a higher level of quality in theaters, audiences might just choose to stay home with their wall-size, flat-screen, broadband-delivered, quality-enhanced digital displays. This future technology is not far off, and some of it has already arrived.

The hysteria I mentioned earlier has extended far beyond our own technical halls. It has reached as far as the world public press and, of course, to Wall Street. In fact, there has been too much irresponsible journalism reporting on one side of this issue — not only in the public press but also in technical journals covering all aspects of new and old technology. It seems everybody has an opinion. But most often, the press releases from the very companies that hope to market this new technology are passed on as gospel, without balanced investigation or reliable, expert opposing opinion.

At a recent conference I attended, a *Rolling Stone* reporter kept asking, "When will film be dead? Just give me a date. I need to print something." This approach will get us nowhere. We need to have a balanced look at all of these new possibilities, not just headlines. ■

ASC Statement On Digital Cinema

Drafted by John C. Hora, ASC

Given the rapid rush of new technologies for the creation of motion pictures, the industry's gatekeepers of technical excellence must remain ever more vigilant in their quest to both maintain and improve upon existing standards and practices. In light of digital technology's increasing importance in the realm of image projection, film and video professionals are quite rightly concerned about the impact that these systems will have on their craft.

At a May 6 seminar co-sponsored by the American Society of Cinematographers and The Hollywood Reporter, ASC member John Hora addressed this issue by outlining the Society's position on standards of delivery and display for digital cinema. The text that follows, which has been approved by the ASC's Board of Governors, combines Hora's previously drafted definition of the term "cinematography" with his May 6 statement, which expresses the hope that cinematographers and other motion-picture artists will be consulted on any initiatives that impact their specific areas of expertise.

Cinematography is the art and craft of the authorship of visual images for the cinema, extending from conception and preproduction through postproduction to the ultimate presentation of these images.

All and any processes which may affect these images are the direct responsibility and interest of the cinematographer. Cinematography is not a subcategory of photography. Rather, photography is but one craft which the cinematographer uses in addition to other physical, organizational, managerial, interpretive, and image-manipulat-

ing techniques to effect one coherent process.

Cinematography is a creative and interpretive process which culminates in the authorship of an original work rather than the simple recording of a physical event. The images which the cinematographer brings to the screen come from the artistic vision, imagination, and skill of the cinematographer working within a collaborative relationship with fellow artists.

"The ASC welcomes and supports all efforts that improve the quality, accuracy and efficiency of presentations of motion pictures for the public. The ASC does not support any attempt to use lower resolution and less appropriate methods which may be temporarily convenient."

The ASC welcomes and supports all efforts that improve the quality, accuracy and efficiency of presentations of motion pictures for the public. The ASC believes that it always has been the mission of the delivery and display system to bring the highest-quality image possible to the public theater, equal in all respects to the intentions of the authors of that original image.

The ASC recognizes that it is imperative that these creators of the original image must be included as active participants in any process of development or standardization of a new delivery and display system. Those with expert

knowledge and experience, those whose work is at risk — [including] directors, cinematographers and production designers — must be invited to fully participate in the design process, and their resources [must be] made available to the engineering community.

Recognizing the high resolution and color quality seen in film prints evident in laboratory and industry screenings, the ASC supports only those technologies that allow this level of resolution and quality to be presented to the paying public.

The ASC believes that all presentations must be made in the full aspect ratio and in the appropriate scale of the original, as intended by the creators. Images must not be cropped or modified. Wider images should be delivered with the highest resolution [at] full height, and not be letterboxed into narrower fields.

Specifically, the telecine or datacine transfer, the sampling rate, pre-filtering, compression and display technologies must all be capable of delivering an artifact-free presentation replicating the spacial, color and temporal resolution of the original.

The ASC does not support any attempt to use lower resolution and less appropriate methods which may be temporarily convenient. The ASC does not believe that "average case" or "worst-case" examples of quality evidenced in some film theaters, or with some film prints, should ever be considered the level of performance that is acceptable for a new and lasting delivery and display system.

The ASC does not support the use of lower levels of performance exemplified by the television equipment and systems developed for HDTV broadcast for cinema presentation.

The ASC believes that the paying public, the creative artists, the exhibitors and the production entities must all share in the benefits derived from a digital cinema. The public deserves the highest level of presentation in the theater environment and must be given a level of quality visibly above that which will be available in the home. ■

From the Clubhouse



ASC Members Assemble On East Coast

East Coast ASC members met for the first time this year at the Il Campanello restaurant in New York City. A group of 15 members and guests attended, including members Sol Negrin, Geoff Erb, Ron Fortunato, Ken Kelsch and Constantine "Gus" Makris. Associate members Jack Bonura of Tiffen Corp., Joe Violante of Technicolor NY, Ray Emeritz of Panavision NY, Milton Keslow of Keslow Television, and John Kowalak and Steve Garfinkle of Kodak were also in attendance.

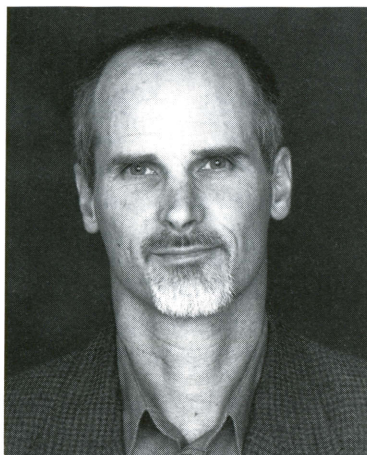
A demonstration of the new Panavision XL camera was to be the dinner's main event, but the camera unfortunately was in use on a film project and thus unavailable at the time.

Negrin Receives Honorary Doctorate

Sol Negrin, ASC was the recipient of an honorary doctorate of fine arts from Five Towns College of Huntington, Long Island, in New York. He received the honor during commencement ceremonies on May 26, and is now a professor in the college's new film program, which was initiated in 1999. Negrin also teaches at the School of Visual Arts in New York.

Negrin has received five Emmy nominations during his extensive career, including three for the popular detective series *Kojak*, one for an episode of *The Baker's Dozen* and one for the telefilm *The Last Tenant*. In addition to the numerous awards he has earned for his work on television commercials, Negrin was awarded the Billy Bitzer Award in 1986 from the International Photographers Guild, Local 644.

Negrin's eldest son, Michael, is also an ASC member. His youngest, Robert, is a camera assistant and is currently involved in producing.



New ASC Members

Marc Reshovsky and Anthony B. Richmond, BSC have joined the active ranks of ASC membership.

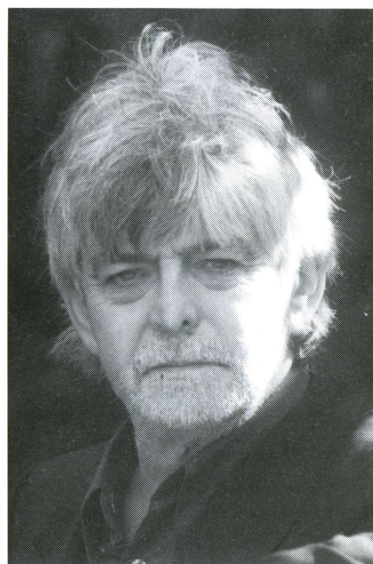
Marc Reshovsky, a 1980 graduate of UCLA's film school, began work as an assistant and soon cinematographer on adventure documentaries. After a two-year stint in New Zealand, during which time he photographed numerous commercials and documentaries, he returned to Los Angeles and became a prolific music-video cinematographer. His photographic style on *En Vogue's* music video for "Free Your Mind" earned him a Music Video Producers Association Award for Best Cinematography.

Broadening into feature and television work, Reshovsky won the 1997 ASC Award for regular series cinematography for an episode of *3rd Rock From the Sun* directed by Phil Joanou that featured 3-D dream sequences (see *AC* May '98). He served as director of photography on two short films in 1996 and 1997, *Trevor* and *Lieberman In Love*, that won Academy Awards for Best Live-Action Short Subject. His feature credits include *Red Rock West*, *Set It Off* and *Most Wanted*.

Anthony B. Richmond, who is also a member of the BSC across the pond, trained as an assistant under such

notable cinematographers as Nicolas Roeg, Freddie Young, BSC and Geoffrey Unsworth, BSC. In 1973, Roeg had moved on to directing and selected Richmond as his director of photography on *Don't Look Now*, for which Richmond later won a BAFTA Award for cinematography. He went on to shoot *The Man Who Fell to Earth*, *Bad Timing* and *Heart of Darkness* for Roeg.

Richmond also photographed Jean Luc Godard's Rolling Stones film *Sympathy for the Devil*, as well as the comedies *That's Life* and *Sunset* for Blake Edwards. In 1997, he and director John Milius tackled the Battle of San Juan Hill in TNT's *Rough Riders* (see *AC* July '97), with South Texas doubling as Cuba. For the final battle scene, Richmond referenced Frederic Remington's



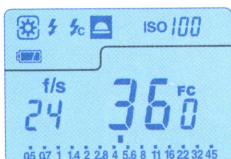
paintings of the actual Spanish-American conflict.

Richmond's other credits include *The Eagle Has Landed*, *The Sandlot*, *A Walk on the Moon* and *Ravenous*. He has three films due out in 2000: *Agnes Brown*, *Cherry Falls* and *Navy Diver*. ■

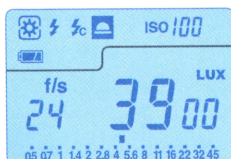
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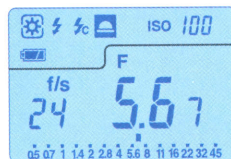
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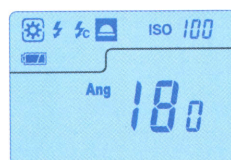
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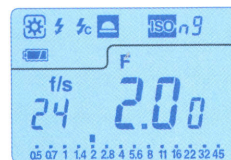
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SEKONIC PROFESSIONAL DIVISION
MAMIYA AMERICA CORPORATION

8 Westchester Plaza, Elmsford, NY 10523 • 914-347-3300
For fast information FAX your request to 800-321-2205
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THE HARD FACTS ON GOING SOFT.

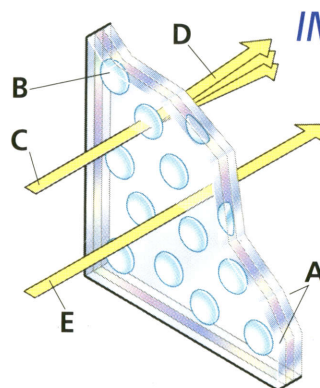
CLASSIC SOFT™ FILTERS

FACT: Schneider Classic Soft Filters are subtle, effective and flattering softening filters that can be used freely without fear of compromising the high quality of modern motion picture lenses.

FACT: Schneider Classic Soft filters are only possible because of a proprietary Schneider manufacturing technique that produces a Micro-Lenslet™ array within each fine optical glass filter. Micro-Lenslets cause a precisely controlled soft image to be overlaid on a sharp, in-focus image, creating In-focus Diffusion™. This blends small wrinkles and blemishes, while maintaining an overall sharp focus that conceals the fact that a softening filter was used.

FACT: Round Classic Soft Filters are available in 4"x4", 4"x5.650" and 6.6"x6.6", as well as round Series 9, 4 1/2" and 138mm, in strengths of 1/8, 1/4, 1/2, 1 and 2.

FACT: A softening filter that maintains this high degree of image quality, simply is not available anywhere else.



IN-FOCUS DIFFUSION™

Sandwiched between two pieces of Schneider's optical glass (A), are hundreds of precision Micro-Lenslets (B). During use, image light (C) that passes through each Micro-Lenslet is slightly refracted (diffused) (D), while light (E), passing between Micro-Lenslet is unaffected.

THE BEAUTY OF SCHNEIDER FILTERS.

Schneider OPTICS

Schneider Optics, Inc. 285 Oser Avenue, Hauppauge, New York 11788 USA
TEL +1 631 761-5000 • +1 800 645-7239 • +1 631-761-5090
info@schneideroptics.com • www.schneideroptics.com

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